THE WATCH

THOROUGHLY REVISED

GENE STONE AND STEPHEN PULVIRENT

ZENITH
SPECIAL

BASE
SAT
FRI
MON
TUE
WED
JAN
FEB
MAR
APRO
MAY
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AUDEMARS PIGUET
GENÈVE

12
1
2
11
10
29½
Breguet

CONSTANTIN
VACHERON
CONSTANTIN
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FIVE (5) POS
TWENTY-ONE (21) JEWELS
SS MADE

TUDOR
GENEVE
200m:660ft
CHRONOMETER
OFFICIALLY CERTIFIED

AUDEMARS, PIGUET & Cº
GENEVE

THE **WATCH**

THOROUGHLY REVISED

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ABRAMS, NEW YORK

PATEK PHILIPPE
GENEVE

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PREFACE TO THE SECOND EDITION

The world of watches never stops changing. This book first appeared in 2007; today, the landscape looks quite different. It's time for an update on what's been happening over the last dozen years.

For one, the community of watch lovers has grown enormously. Far more people are interested in watches than ever before — a trend due to the almost unlimited resources that consumers and collectors now have at their disposal to learn about watches, thanks mostly to the internet, which has helped democratize a formerly opaque and forbidding world. It's no longer necessary to be a high-end collector or a part of a private group of die-hard fans — today, subcommunities are popping up all over the world and are easy to find and join.

The watches themselves have changed as well. One interesting development has been the addition of new, high-tech materials to watch manufacturing — especially silicon, which is used in hairsprings and other critical components. Brands are also not afraid to experiment, developing new kinds of oscillators, variations on the tourbillion, and different constant-force mechanisms. Years ago, most experimentation went into flashier complications. Now, it's back to basics: building a better balance wheel, a better hairspring, a better timekeeper.

Manufacturers are also pushing hard toward true vertical integration, whereas a decade or two ago, few big brands made their own movements. More and more are designing and manufacturing proprietary calibers in-house. This is taking place at all ends of the spectrum, from Nomos to Panerai to Patek Philippe.

While sales of new watches have fluctuated over the last decade, vintage collecting has flourished, with more auction houses, vintage stores, and online outlets becoming involved than ever before. Though vintage collecting once centered on Patek and Rolex, now brands like Audemars Piguet, TAG Heuer, Omega, Jaeger-LeCoultre, Universal Genève, Vacheron Constantin, and dozens of others are in high demand.

This vintage trend has also had ramifications on how contemporary watch companies fashion their own lines as they attempt to recapture the magic of the past with new iterations such as Longines' 1945 or Tudor's Heritage collection. Meanwhile, slim, traditional, vintage-inspired watches have become increasingly popular, replacing the oversized behemoths that dominated the market in the early '00s.

However, the biggest change in the last dozen years has to be the introduction of the smartwatch. Apple's entry into the watch business has shaken up the industry more than any other company's first foray. It's still too early to know how smartwatches will revolutionize the business long term, but a fire has been lit under the industry to think differently and more seriously about how to offer customers something exceptional in the face of the convenience of an Apple Watch. Some companies have already jumped in: TAG Heuer has its Connected Watch (a 45mm Carrera case with a touch screen and Android Wear operating system —

Google and Intel are its partners), while Hermès is taking a different approach to the new challenge and partnering with Apple on high-end watch bands.

Despite all these changes — or because of them — there has never been a more exciting time to be a watch lover. New companies are springing up every year, innovation is happening faster than ever before, the smartwatch is keeping the industry on its toes, the vintage market has never been stronger, and technology is pushing the mechanical watch in unheard of directions. Many of these initiatives won't pan out, but their sheer volume guarantees interesting results. We don't know who the winners will be, but we're witnessing a fascinating battle for the very soul of the watch.

NOTE: Inside this second edition you'll find new brands that have emerged as leaders in the last dozen years (and you'll realize that some brands are no longer represented); you'll find photos of some of the most amazing watches of the last decade; you'll read updates on what all the brands have been doing; you'll meet new collectors and read about new developments in the world of watches. Equally exciting, Stephen Pulvirent, journalist, watch collector, and editor at HODINKEE, is now also a part of this book's team.

A PIECE OF JEWELRY . . . VACHERON CONSTANTIN 222, 1980s, yellow gold and stainless steel, self-winding mechanical movement with date

THE MORE COMPLICATED, THE BETTER . . . IWC Il Destriero Scafusia, 2000s, pink gold, mechanical self-winding movement with tourbillon, split-seconds chronograph, perpetual calendar, minute repeater, and moonphase

MADE FOR THE MILITARY . . . HEUER BUNDESWEHR, 1970s, stainless steel, hand-wound mechanical movement with flyback chronograph. This watch was made for German air force pilots.

A SPECIAL PARTNERSHIP . . . PATEK PHILIPPE REFERENCE 2545, 1955, yellow gold, hand-wound mechanical movement, dial co-signed by Tiffany & Co.

BREGUET, PARIS, c. 1790, silver, mechanical movement with date

A BRIEF HISTORY OF TIMEPIECES

The urge to know time predates recorded history. Primitive people left no accounts, but we know that as humankind began to develop complicated social structures, the coordination of time became increasingly important. Social cooperation demands structure: People wishing to hunt, fish, or farm together need to be able to coordinate when to start and stop, as they do for any other mutual events planned for a future time.

For eons, the sky and the clock were virtually synonymous. The sun, the moon, and the stars calculated time for those observant enough to understand. Knowing cosmology meant the ability to determine when the weather was going to become cold or warm, when the seasons would change, and any other events vital to civilization.

Humans responded by becoming avid timekeepers; some of the largest and most impressive of early man-made structures — the Egyptian pyramids (which can be used to predict equinoxes) and Stonehenge (which foretells any number of seasonal aspects) — were designed in part to keep track of time. While they had other functions as well — some obvious (the pyramids were tombs), others not so obvious (Stonehenge's ultimate purpose is still unknown) — these monuments were also among the earliest public clocks.

For most of human history, the division of time took place on this large scale — seasonally, monthly, weekly. But as civilization grew more complicated, the need to divide the day into smaller increments arose. The Egyptians were the first to come up with the twenty-four-hour day, and later the Greeks and Romans followed suit. These hours, based on the solar day, were not equal — the twelve daylight hours were longer than the twelve nighttime hours in the summer, and the opposite in the winter.

Similarly, the first so-called clocks — mostly time sticks and sundials — were not accurate to the degree modern civilization expects and requires. Sundials have spokes (also called gnomon) that cast a slim shadow; time was told by judging its angle and length. Originally simple, these sundials grew ornate, with hour markers carved into the earth or upon a highly decorated metal base. Form became as important as function; a simple dial could tell the time as well as a fancier one but increasingly the preference favored elaborate models, just as today, watches that merely report the time are less popular than watches with fancy embellishments. Some fashions don't change.

Because sundials only work if the sky is clear and the sun bright, early timekeepers searched out other ways to indicate the passage of time. These included marking candles with bands that burned at specified rates and the development of the hourglass, a device filled with sand that seeps through a small hole in a predictable trickle.

Other inventions followed, perhaps the most successful being the water clock, or clepsydra, a 3000 BC Chinese invention that tracks the flow of water into a vertical tank at marked intervals, like sand through an hourglass. Western societies eventually adopted it; Egyptians

used the clepsydra as early as 1500 BC, and Plato introduced it to the Greeks.

The mechanics behind these water clocks were simple, but like sundials, clepsydras evolved into ornate structures (the Egyptians bejeweled their nozzles). Many were supplied with the latest innovations in gears and dials, and some sprouted extra functions such as hour-tolling or displaying planets' orbits.

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Between the fall of ancient civilizations and the rise of Western society, the face of timekeeping history becomes almost blank once again. In Europe, few people needed to know the time, nor did they have the ingenuity or the means to build complicated machines of any kind. Timekeeping methods did not change dramatically for many centuries, although the Chinese continued to work on their water-driven clocks: Inventor Su Song (c. 1088) created water clocks with complex astronomical displays and chimes; his drawings were so detailed that recently scientists were able to build one of his devices.

NOURRISSON À LYON, 1659, silver and gold, sundial with compass. Sundials, often combined with compasses, preceded watches as portable timekeepers, but they can’t have been very practical.

But, as records from the twelfth and thirteenth centuries indicate, interest in the timepiece, or horologium, began to resurface. And in the fourteenth century, mechanical clocks made their first appearance in Europe.

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The invention that made it possible to build a mechanical clock is a device called an escapement. The escapement translates the anarchic, onrushing energy generated by a primitive power source like a falling weight or, later, a powerful spring, into the gentle, metronomic pulses needed to keep a clock running accurately.

The French architect Villard de Honnecourt described an escapement as early as AD 1250, but there's no record to prove he actually built a clock containing one. The first clocks with an escapement seem to have appeared in Europe in the late thirteenth century. No one knows exactly who first invented them, or where; England, Flanders, Italy, and France lead the list of possibilities. Norwich, England, had a clock tower by 1352; St. Albans, near London, had one by mid-century; and in Italy, a famous astronomical clock constructed by Giovanni de Dondi was completed in 1364.

Then again, as historian David S. Landes points out in his book *Revolution in Time*, it's also possible that Pope Sylvester II (c. 940–1003) built a mechanical clock. No one knows.

UNKNOWN MAKER, THE NATIVITY, c. 1600, gilt bronze and silver, mechanical movement. This clock, made to hang as a pendant, predates the invention of the balance spring.

These early clocks were indebted to their water clock predecessors in that they used the same weight-driven gears previously employed to ring bells on water clocks and other non-mechanical devices; added to that were the gears of an early escapement.

These clocks had no hands, however. Their purpose was to ring bells to sound the hours, which is probably why the word clock derives from the Old French word *clocke*, which in turn comes from the Medieval Latin *clocca*; both words mean bell.

Slowly, hands and wheels came into alignment, and by later in the fourteenth century, large clocks with hour hands were being built throughout Europe.

Which came first, the ability to create a device that could tell the time to any human who wanted to know, or the human desire to own a device that could do so? Was history altered by the sudden ability to know time, or did society need timepieces in order to help structure the changes already taking place? These questions are unanswerable. But the ability to know the time in a more personal way than had ever been possible before was a development with major ramifications for the workplace, communication, transportation, and the military, all of which were better able to operate with uniform timekeeping.

By the sixteenth century, a great many clocks had been built, but these were large and public. The first mechanism that could be considered a watch didn't appear until 1511 when, according to some horologists, a German named Peter Henlein created a pocket watch with a single hour hand; it was called the Nuremberg Egg. Others claim that the Italians had already invented a portable clock in the late fifteenth century. But because timekeeping and record-keeping were on the same track — making advances, but still relatively primitive — we may never know for sure.

The primary problem inventors faced while creating a portable timepiece was the driving power. Most timepieces of the day were driven by weights, which were not portable. But rapidly developing advancements in metallurgy allowed the manufacture of small, coiled springs, which were eventually able to take the place of the traditional weights. (At the time, both stationary and portable timekeepers used what's known as a foliot, which would eventually be replaced by the pendulum in stationary clocks, to maintain an even rate. The foliot eventually evolved into the balance wheel, combined with a coiled hairspring, in portable timekeepers.)

Small clocks slowly grew in popularity, especially among royalty. Emperor Charles V commissioned several, and in France, watchmaker Julien Coudrey supposedly made two daggers with small clocks enclosed in their handles for King Louis XI.

Most of these early efforts were German or French — the Swiss and the English did not begin making pocket watches until later in the century; one of the earliest English pieces may well have been the watch set in a bracelet that the Earl of Leicester presented to Queen Elizabeth in 1571.

Portable watches were most often worn as pendants around the neck, although some were small enough to be cased in precious metals and worn as a ring. And, like Elizabeth's watch, some were strapped around the wrist, but few men adopted the habit of bracelet wearing. In 1675, when England's Charles II helped popularize the long waistcoat, men routinely placed their watches in waistcoat pockets, and the term "pocket watch" was coined.

While a spiral spring was first used for the mainspring around 1500, in 1675 a spiral balance spring found its way onto the balance to become what we now know as the hairspring, a step that greatly improved timekeeping accuracy. This also led to the introduction of a minute hand, although for many more years most watches still only featured one hand.

Dutchman Christiaan Huygens (1629–1695) is widely credited with two of the most important innovations for mechanical timekeepers: the pendulum (1656) and the balance spring (1675), oscillating systems that improved the performance of the escapement. Clocks with pendulums became accurate to one minute a day for the first time in history. (Alternate theories credit Galileo with inventing the pendulum clock — his son Vincenzio apparently helped Galileo manufacture an unsuccessful model, which Vincenzio subsequently destroyed in a feverish rage later in life.) But the smaller pocket watch was not yet accurate enough to be used as a true timekeeper; it was still something more than jewelry and less than a tool. It took the man generally considered to be the greatest watchmaker of all to change this.

Abraham-Louis Breguet (1747–1823) started making his own watches in 1780, and through many innovations and inventions, including the overcoil balance spring and shock resistance for balance pivots, created a watch that both kept time well and looked beautiful.

Breguet, born in Switzerland, did his best work in France, yet it was Switzerland that eventually became the capital of time. Protestant reformer John Calvin had forbidden Genevan craftsmen from making something as frivolous as jewelry, but did encourage the manufacture of the more practical watch. The craftsmen responded enthusiastically.

As highly as Breguet is regarded, he didn’t invent in a vacuum: His work was indebted to that of Peter and Jacob Debaufre and Nicolas Facio (who invented jeweled bearings); George Graham (temperature compensation, dead-beat escapement, cylinder escapement); Thomas Mudge (lever escapement); and John Arnold and Thomas Earnshaw (chronometer escapement). And, of course, there was John Harrison (1693–1776), the Englishman who developed and built the world’s first successful maritime clock, whose accuracy was precise enough to allow the determination of longitude over great distances.

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JAQUES MOREL, GENEVA, LA CHASSE, c. 1690, silver, mechanical movement with alarm. This is an example of an early Swiss pocket watch with a single hand, incorporating Huygens's balance spring, invented in 1675.

By the early nineteenth century, a great many watch manufacturers had sprung up, creating a multitude of models for the aristocracy as well as for those in certain bourgeois professions such as medicine and transportation, where time-keeping had become increasingly important. The watch was in the process of transforming from a luxury to a necessity.

The construction of a watch, however, was still laborious and time-consuming, which is why the innovations of 1839 were so important: Swiss engineers Georges-Auguste Leschot and Pierre Frédéric Ingold created machinery that could make interchangeable watch parts, permanently altering what had been a handmade industry. (It was, however, the Americans rather than the Swiss who took the lead in manufacturing partially machine-made watches that were both accurate and relatively inexpensive.)

More innovations followed, including the invention of keyless winding and hand setting (both Jean Adrien Philippe and Jules-Louis Audemars, among others, are given credit for the development). Initially the change of mode from hand setting to winding was accomplished via an external lever, or key, but this lever was now unnecessary; nor did a metal case need to be opened constantly. The snap-on bezel was added, and the hinged back could now be snapped shut. The dust cap mutated into a small hinged cover fitted inside the back, and the movement was screwed in place instead of hinged.

Complications

Watches that do more than tell the time of day to the second are described as having "complications." Simple complications might include the date or the power reserve (that is, how much longer a watch will run before needing to be rewound). A chronograph is a complication that measures elapsed time to the second after a button is pressed. A moon indicator keeps track of the moon's phases. Over time, watch-makers have invented different ways to display the data measured by a complication on a watch dial. Not all complex or unusual dial arrangements reflect complications. For example, watches with so-called regulator dials that use different registers or subdials to show hours, minutes, and seconds may appear very complex, but they are actually simple timekeepers. Virtually all of the complications and dial arrangements used in modern wristwatches first made their appearance in pocket watches in the eighteenth and nineteenth centuries, though creating new complications and combinations of complications is a goal of many modern watchmakers.

HAAS NEVEUX & CO, GENEVA, TRIPLE COMPLICATION, c. 1890, yellow gold, mechanical movement with perpetual calendar, split-seconds chronograph, minute-repeater, and moonphase

GUINAND, PARIS, c. 1800, gold, mechanical movement with date. This unusual watch has a mechanism for showing the date in its large central aperture.

VACHERON CONSTANTIN REFERENCE 4240, 1945, yellow gold, hand-wound mechanical movement with month, day, and date

F.P. JOURNE OCTA CALEN-DRIER, 2013, platinum with gold dial, self-winding mechanical movement with annual calendar and retrograde date display

A. LANGE & SÖHNE LANGEMATIK PERPETUAL, 2007, rose gold, self-winding mechanical movement with perpetual calendar, moon-phase, and big date

GREUBEL FORSEY TOURBILLON 24 SECONDES INCLINE, 2008, white gold, hand-wound mechanical movement with inclined tourbillon and power reserve

VACHERON CONSTANTIN PATRIMONY CONTEMPORAINE ULTRA-THIN CALIBRE 1731, 2013, rose gold, hand-wound mechanical movement with minute repeater

PATEK PHILIPPE REFERENCE 5950, 2011, stainless steel, hand-wound mechanical movement with monopusher split-second chronograph

CARTIER SANTOS DUMONT, 2004, yellow gold, mechanical movement. The Santos Dumont is considered the first aviator's wristwatch. This is a twenty-first-century edition of that watch.

PAUL DITTESHIEM, 1910s, gold, mechanical movement. The dial on this watch with wire lugs was popular after the turn of the century.

With the introduction of the second hand, some makers provided one that could be stopped, for timing. However, in these early watches, stopping the second hand also stopped the entire watch. The first true chronograph was designed in 1844 by Adolphe Nicole; it wasn't until 1862 that the contemporary three-pusher system was used.

Another great innovator, Dresden-born Adolf Lange, was not only a superb watchmaker but was interested in fair labor practices. Thanks to him, the town of Glashütte in what is now eastern Germany turned into a center for watch manufacturing. Lange devised ways to make sure that his employees were well educated enough to form their own companies, each of which could continue to supply his firm with excellent parts. He also created the great brand that became A. Lange & Söhne.

The need for accurate timepieces was spurred by the industrial revolution. For the first time, more people worked in factories than at home, and they worked there for a specified amount of time; that period had to be recorded for proper payment. Employers and employees both wanted to keep track of this record, and both used timepieces, which soon proliferated.

And, of course, a new means of transportation was becoming common: the train. Trains work best when they operate on an invariable schedule, reducing the likelihood of accidents, as well as making it convenient for fare-paying passengers to leave at a set time. Watch companies started creating watches specifically for railroad engineers and conductors, and accuracy was more important than ever.

At the end of the eighteenth century, about four hundred thousand timepieces were being made annually; seventy-five years later, that number had increased approximately 500 percent.

But these were primarily pocket watches; the wristwatch was worn only by women, often as a fashion accessory. Men avoided it. Moreover, the established watchmaking community disdained wristwatches; and due to their small size, few manufacturers believed they could be constructed with a serious degree of accuracy, nor made strong enough to endure the rigors of constant exposure on the wrist.

The tide started turning in the late nineteenth century, in large part because soldiers discovered the usefulness of the wristwatch during wartime. Pocket watches, which required at least one free hand to operate, were difficult to use in combat. Soldiers began fitting watches on leather straps tied around the wrist, freeing up the hands to operate weapons.

Breguet claims to have made a wristwatch for the Queen of Naples in 1810, and Patek Philippe says it made a wristwatch for the Countess Kocewicz in 1868, but Girard-Perregaux seems to have been the first brand to make wristwatches in any quantity for men — in 1886, the company equipped the German Imperial Navy. American manufacturers were also looking into the market. By the end of the century, the Waterbury Clock Company (which eventually became Timex) was selling a men's wristwatch (for $3.50). Other manufacturers explored the potential. In 1904, Omega bought an advertisement in a German newspaper describing the Boer War–related exploits of a British military officer, who reportedly stated that a wristwatch was a necessary part of combat equipment because it freed soldiers from having to dip into their pockets to check the time.

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LONGINES 13ZN CHRONOGRAPH, 1940s, stainless steel, hand-wound mechanical movement with flyback chronograph. The 13ZN is considered one of the best chronograph movements of all time and it was the first to include the flyback function.

In 1906, the evolution of wristwatches took another step forward with the introduction of wire loops (or lugs) soldered onto small, open-faced pocket watchcases, allowing leather straps to be more easily attached. Another concern was the vulnerability of the glass crystal, especially when worn during combat; the solution became a pierced metal cover placed over the dial, protecting the glass but still allowing the time to be read.

One of the next milestones came in 1907, when Brazilian aviator Alberto Santos-Dumont asked his friend, renowned jeweler Louis Cartier, to make a watch he wouldn't have to keep taking out of his pocket while navigating the plane. Cartier quickly created the Santos, with a movement provided by the watchmaker Jaeger (which was soon to merge with LeCoultre to create one of the giants of the watch industry).

World War I did more for the men's wristwatch than any other single event in the history of timepieces. Allied troops were routinely issued wristwatches, and their reliability and convenience won the loyalty of soldiers. When the war ended, the soldiers returned home, where, accustomed to the convenience of the wristwatch, they refused to return to the pocket watch. The wristwatch could no longer be construed as feminine if it was favored by the Great War's military heroes.

Models were also created featuring lugs that were integrated into the design of the case, which gave the watch a more finished appearance. And to enhance the watch's durability, metal dials were beginning to replace porcelain ones, which had been susceptible to cracking and chipping. Similarly, fragile glass crystals were replaced with those made of newly invented synthetic plastics.

After the war, Louis Cartier created another classic, the Tank, made to resemble the tracks of another new invention: the armored tank. Cartier presented the watch to the American general John J. Pershing, commander of American troops in France. The watch, first created in 1917, is one of the most emulated designs in watch history.

Acceptance among men was further solidified after a high-altitude flight record was set by a pilot wearing a wristwatch; athletes at the 1920 Olympics also wore them.

One company that found great success with these new wrist pieces was Wilsdorf & Davis, Ltd., later renamed the Rolex Watch Company. Hans Wilsdorf, the company's founder and director, was a strong proponent of wristwatches and worked obsessively to make them accurate and reliable. In 1927, a British secretary swam the English Channel wearing a Rolex wristwatch, proving it was waterproof; Wilsdorf had presented the swimmer with the watch, and also made sure photographers were present to record that it still worked after the crossing. The new brand was called the Oyster; it's still the foundation of the company's most popular models.

CARTIER TANK AMÉRICAINE, platinum, mechanical movement. Cartier's Tank has appeared in many variations over the last one hundred years, and it remains one of the most iconic watches of all time.

Rolex also popularized self-winding wristwatches after adopting a reliable automatic system designed by Englishman John Harwood.

Although watch industry traditionalists still felt the pocket watch represented the future — and throughout the 1920s more of them were produced than wristwatches — by the end of the decade the wristwatch was outselling the pocket watch. Companies added many more wrist models to their catalogs; by the mid-1930s, wristwatches accounted for fully 65 percent of all watches exported by Switzerland. Wristwatches had arrived. Increasingly accurate, water-resistant, and self-winding, they were worn in adventurous situations and were heavily publicized as such; in 1933 Admiral Byrd wore a wristwatch on his second expedition to the South Pole.

With the triumph of the wristwatch assured, new and more interesting models were created, such as Jaeger-LeCoultre's reversible Reverso, Vacheron Constantin's louvered Jalousie, and IWC's antimagnetic Mark X.

World War II interrupted the advance; many manufacturers either slowed or stopped production, although neutral Switzerland continued making watches for the military. But after the war, watchmaking flourished again. Fancy new models were produced, thinner movements invented, and more complications introduced, including chronographs, alarms, and moonphase indicators.

By 1950, about forty million watches a year were being manufactured. (The number today is in the hundreds of millions.) For the most part, through the 1950s and 1960s, dial designs of the major watchmakers remained conservative, although some of the smaller manufacturers and many American designers started playing with some of the popular new art forms such as Op Art in the sixties. Outstanding new designs included the irregularly cased watches designed for Patek Philippe and Hamilton by Gilbert Albert and Richard Arbib, respectively. And, for Movado, Nathan George Horwitt came up with a face that was simple, clean, and used only one mark: a gold dot at the twelve o'clock position, along with hour and minute hands. Eventually known as the Museum Watch, as it was the first watch to be displayed in New York's Museum of Modern Art, it is still a mainstay of the Movado brand.

INGERSOLL WATCH CO. MICKEY MOUSE, c. 1930, nickel, mechanical movement. Manufacturers quickly employed popular culture to market their watches.

HAMILTON VEGA, c. 1960, yellow gold filled, electric movement

Still, there was little need to innovate or change the overall wristwatch concept; according to common wisdom, the mechanical wristwatch had triumphed.

The reality was different: The wristwatch was about to face a thorough upheaval.

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In looking for new ways to power timepieces, as well as to ensure accuracy, technicians had begun experimenting with new electronic regulating devices, one of which was quartz. The first battery-operated quartz clock was produced in 1929 by a Canadian, Warren Morrison, at New Jersey's Bell Laboratories. Soon afterward, quartz clocks became popular in places where precision was necessary as the new technology kept time better than mechanical clocks.

Although battery-powered watches were being developed by the early 1950s, the electronic watch, which replaced the mechanical escapement with the electronic vibrations of a tuning fork, was not considered a threat to the mechanical watch. The former remained bulky, unattractive, and for the most part, ignored by consumers. Still, the Asian watch industry saw possibilities in the new technology — particularly the Japanese, who had never found the means to compete with the Swiss. Now they began exploring ways to mass-produce inexpensive, accurate quartz watches. They couldn't beat the Swiss at the Swiss's game, but they suspected that if they invented new rules, they could prosper.

In the meantime, the American Hamilton brand was introducing its own line of battery-operated watches, especially for its Richard Arbib–designed, space-age models, like the Ventura and the Vega. These were enormously successful. (Hamilton, now owned by Swatch, has reissued both.)

To compete with Hamilton, in 1960 Bulova came out with its own version of a battery-powered watch, the Accutron, featuring a tuning fork regulator. Throughout the 1960s this very successful watch looked as though it might replace the mechanical watch, and other companies began developing similar models.

But the electric watch wasn't the future. Quartz was. Although the Swiss were working on quartz models, the Japanese companies Seiko and Citizen beat them to the market with quartz watches that offered consumers something new: extremely reliable timepieces that cost a fraction of the price of a mechanical watch. By 1969, Seiko had introduced its first line of quartz watches, the SQ Astron. It sold more units than any watch industry expert had predicted.

What horologists now refer to as the quartz revolution horrified the Swiss industry. It also changed the business forever. Hundreds of good companies disappeared. Reputable brands such as Jules Jurgensen, Buren, Enicar, Mathey, and Record were never heard from again. In 1969, there were about sixteen hundred watch companies in Switzerland; today, there are approximately 650 (and many of these appeared only after the mechanical revival of the 1980s).

Other brands feared for their futures and sought out new sources of capital, often unsuccessfully, or were sold to those who at the time seemed dubious buyers of companies whose stock-in-trade — creating mechanical watches — appeared to have lost all its promise.

Still other brands attempted to manufacture quartz watches of their own, but most failed to see the potential of mass production and produced expensive models that couldn't compete

with the Japanese. Other companies experimented with varying forms; for example, in 1970, following the success of its electric watches, Hamilton brought out the Pulsar, a quartz model with a digital LED (light-emitting diode) display. These ungainly watches were interesting but burdened with flaws — the batteries expired quickly and the display was difficult to read. Eventually, LED gave way to the LCD (liquid-crystal display), which created a constant display, but by then it was too late for Hamilton.

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The mechanical watch reached its nadir in the 1970s. There was talk that the Swiss watch industry would never recover. Anxiety and unemployment gripped the Swiss valleys where watchmaking had been entrenched for centuries.

Then came two unexpected developments. First, in 1983, the Swiss introduced a line of inexpensive and well-designed quartz watches: the Swatch. The Swatch sold for as little as $35 because it had far fewer parts than a normal mechanical watch. And yet, it was a Swiss watch, with Swiss design, and Swiss reputation behind it. Swatch sold tens of millions of watches within a few years of its inception; the models were so well-designed, and so well-marketed, that they even became collectors' items when issued in limited numbers. The quartz revolution was no longer quite as frightening to the Swiss now that one of their own was taking the lead.

The other development may have been a psychological reaction to the rapid changes taking place. The quartz watch was a stunning success, but perhaps because of the need to counterbalance technology with humanism, the notion of the handmade, mechanical watch was reborn. Not every consumer wanted a sturdy quartz watch. Some wanted something only the mechanical watch could offer: a small piece of hand-tooled technology that fascinated by virtue of its intricacy. And, there was the prestige factor: Someone who could afford a ten-thousand-dollar watch wanted exactly that, a timepiece that displayed not just superior technology but cachet as well.

Just a decade after the panic had set in, firms that had almost disappeared saw a resurgence in orders, and new companies were emerging to take advantage of this high-end interest. They quickly found consumers who yearned for mechanical watches, extra complications, and dials that harkened back to the past.

These changes took place at a time when the world economy was booming, and the luxury markets in cars, fashion, and other areas were flourishing; watches were only part of this expansion.

The booming world economy helped spur another surprising development: the interest in vintage watches. In the 1980s, wristwatches rather than pocket watches became the mainstay of auctions and jewelers; houses such as Christie's and Sotheby's were holding auctions that featured wristwatches, while a new firm, Antiquorum, was founded to auction only watches and soon was rivaling its long-established peers. Today, Phillips and Bonhams also have thriving watch departments, and nearly every global auction house sells vintage watches in some form or another.

Similarly, starting in the 1990s, watches both new and pre-owned became an essential part of online trading. On any given day on eBay, a search for "wristwatch" will return more than

1.5 million results. Most stores now have online outlets, and some retailers exist only on the internet. Despite the watch industry's reluctance to embrace e-commerce, watch brands themselves have started offering their own products online in the last few years, though the experience of buying watches online is still far behind that of other luxury goods.

PATEK PHILIPPE REFERENCE 2526, 1956, yellow gold with yellow gold bracelet, self-winding mechanical movement, dial signed by retailer Hausmann & Co.

UNIVERSAL GENÈVE TRI-COMPAX, 1960s, stainless steel, hand-wound mechanical movement with chronograph, month, day, date, and moonphase

LIP, late 1960s, silver plated, mechanical movement. This bracelet watch, designed by Prince François de Baschmakoff for Lip, is typical of the restless experimentation that overtook the watch world in the late 1960s and 1970s. So-called jump-hour or direct-read watches like this one, sector watches like the Wittnauer on this page, and early digital watches all competed for attention in a market becoming dominated by quartz watches.

WITTNAUER AUTOMATIC, 1970s, gold filled, self-winding mechanical movement with date

Meanwhile, watches themselves grew increasingly complicated. In the early 1990s, IWC debuted its Il Destriero Scafusia, at the time the world's most complex wristwatch, with twenty-one different functions, including a tourbillon, perpetual calendar, and a minute repeater. It was soon eclipsed by models from companies such as Patek Philippe, Gérald Genta, and Franck Mueller.

Gérald Genta, the man, was another phenomenon. A Swiss designer who had created the first stainless steel sport watch for Audemars Piguet (the Royal Oak), as well as the Nautilus for Patek Philippe and many other iconic pieces, Genta founded his own eponymous brand, which flourished, and then was sold to Bulgari. Meanwhile, designer Daniel Roth, who helped create Breguet's new image, started a company to produce watches with a distinctive ellipto-curvex shape (also now owned by Bulgari). Soon numerous eponymous brands sprang up — Roger Dubuis, whose extra-large and complicated watches helped set trends; F.P. Journe, whose beautifully crafted dials and immaculately engineered movements make him one of the most award-winning of all watchmakers; and Laurent Ferrier, who left Patek Philippe after more than three decades to make his own mark on the industry.

Other brands were offered by global watchmakers such as the Dane Svend Andersen, the Italian Michel Parmigiani, the Frenchman Alain Silberstein, and the Germans Rainer Brand and Rainer Nienaber. New companies were formed to take advantage of the mechanical boom, though over the years as many have failed to gain traction as have found success.

Some companies were revived. Blancpain, which had fallen into desuetude, soon became a leader in the revival of luxury watches. Glashütte Original, once a prominent East German company that was folded into a large conglomerate, was successfully resuscitated after the Iron Curtain fell, as was its neighbor in the town of Glashütte, A. Lange & Söhne, now one of most prestigious of all. And, veteran companies such as Jaeger-LeCoultre and Girard-Perregaux, which throughout the twentieth century sold solid mid-level watches, were now producing high-end, complicated ones. Zenith, for years forbidden from selling in the American market due to its shared name with the American electronics concern, also transformed into a worldwide brand with a loyal following.

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With the economy in its favor, the watch business shook off its 1970s doldrums. For decades, one year after another didn't bring much variety. Today, the industry more closely emulates the car business — each year, new models are brought out and older ones retired. And whereas for centuries the trend was to create the smallest movement possible (and thus the thinnest watches), around the turn of the twenty-first century, huge, oversize watches became popular, and a company like Vacheron Constantin, which once sold watches as thin as five millimeters, was, like its rivals, now selling ones three times as thick.

In 2007, exports of Swiss watches to the United States set an all-time record at $2.44 billion, though after the global financial crisis they dropped precipitously to just $1.47 billion in 2009. After a few up and down years, they landed at $2.14 billion in 2016, having not yet again reached pre-crisis highs. During this time, Hong Kong surpassed the United States as the largest global watch market, with China, the United Kingdom, and Italy trailing just behind the U.S.

Today, watch lovers can satiate their needs through any number of avenues. Watch trade publications such as *WatchTime* and *Revolution* help both novices and collectors sort out models, while a wave of online publications such as *Hodinkee* have democratized information and brought the hobby to a new generation of collectors. Forums such as ThePuristS.com and TimeZone.com have hugely devoted followings and can be great community resources.

HAMILTON PULSAR FOR TIFFANY, 1970s, gold, quartz movement with LED display

F.P. JOURNE VAGABONDAGE, 2005, white gold, hand-wound mechanical movement with wandering hour display

Once again, however, the waters have gotten choppy. Some people now use their smartphones as watches; they are accurate and handy. Apple's smartwatch is now the bestselling watch on Earth. However, we're still in tech's early days, and how traditional watches will compete with the smartwatches of the future is very much a mystery. Will mechanical watches resemble vintage cars, anachronisms taken out at the weekend for fun, while the more modern, practical alternatives are the daily solution? Or will smart-watches prove to be a flash in the pan, just another speed bump on the centuries-old road of mechanical timekeeping?

Meanwhile, the market has bifurcated into two different, but equally interesting halves: modern and vintage. The modern watch market is suffering. In addition to the threats posed by products like smartwatches, a series of recurring global economic crises, and a slowing boom in Asia have stifled growth and caused many companies to panic. Exports from Switzerland are starting to recover, but we're a long way from the heady days of business pre-2007.

As a result, watch companies are realizing that they have two types of customers they must satisfy at once. At the top of the market, there are the well-seasoned collectors looking for ever more complicated watches and new complications to discover. For example, in 2015, Vacheron Constantin produced the reference 57260 pocket watch, the most complicated watch ever made, as a commission from a dedicated collector.

At the other end of the spectrum, watch companies are struggling to entice new buyers to purchase their first mechanical watches. Without the influx of new customers, these brands know that their days could be numbered, and so established makers like Tudor, Nomos Glashütte, and Tissot offer compelling watches at fair prices that can entice a new crop of collectors, while the likes of Jaeger-LeCoultre, Glashütte Original, and IWC present excellent opportunities for buying very high quality watches at prices that don't take away your breath — or all your money (except, that is, at the very top end of these companies' lines). There are also smaller companies, so-called "micro brands," that are often founded by enthusiasts-turned-watchmakers to offer inventive new products that come from a customer-centric perspective.

While the modern watch market struggles, the vintage watch market is booming. Record prices are being set every auction season, with special Rolex and Patek Philippe models regularly fetching seven-figure prices. Watches that used to be considered more entry level — say, a Universal Geneve Tri-Compax or a no-frills Rolex Submariner — have more than doubled in price over the last five years. An increase in popularity and a surge in scholarship are to blame.

Just as the beginnings of timekeeping are unknown so, too, is its future. As of now, however, the mechanical watch is thriving. There are more people interested in mechanical watches than ever; there are more young, independent companies creating innovative watches than ever; there are more places for enthusiasts to turn for information and community than ever. In short, it is a great time to be a watch collector.

Over the centuries, the tools of timekeeping have moved from the largest objects in the sky to what is probably the smallest piece of mechanical technology. The need to measure and know time is part of human nature. And if for some reason the wristwatch, like the sundial and hourglass, disappears, it will be replaced by something equally inventive and equally capable

of helping us know exactly what time it is every second of the day.

OMEGA SPEEDMASTER CK2998, 2016, stainless steel, hand-wound mechanical movement with chronograph

AUDEMARS PIGUET ROYAL OAK TOURBILLON EXTRA-THIN OPENWORKED, 2017, stainless steel, hand-wound openworked mechanical movement with tourbillon

GRADUE POUR 30 PULSATIONS
VACHERON & CONSTANTIN
GENEVE

MB&F

FIFTY BRANDS

PATEK PHILIPPE REFERENCE 130, 1938, stainless steel, mechanical movement with chronograph

A discussion among aficionados about watch brands almost always leads to an argument. Few collectors feel as passionately and personally about their choices. If you ask twenty of them to list the top twenty brands, you'd get twenty different opinions and as many full-fledged debates as well.

Watch collectors talk about brands the way others gossip about people. Get those twenty enthusiasts into one room, and they'll chat as though the brands were personal friends or enemies. "Brand X just fired a pal of mine, so I'll never buy anything that company makes." "Brand Y's new movement is cheap, so avoid everything the brand's ever done." "Brand Z's design is great — I love everything the company does."

All enthusiasts tend to be enthusiastic, no matter the object of their passion, but there is still something remarkable about grown men fighting passionately over a small, seventy-five-year-old piece of machinery. Check out one of the online watch forums listed in the back of this book if you want to observe the phenomenon firsthand. Like a perpetual motion machine, it never stops.

That said, at the moment there are nearly a thousand companies that produce watches (still a far cry from the many thousands that existed before the quartz revolution). Selecting which fifty to profile is bound to create another argument. There isn't room in this book to discuss all the many brands that currently or used to exist — nor is there any need to, as most people interested in watches won't encounter them. So here are the facts on what could best be considered Fifty Brands You Should Know About.

The omissions will probably raise more hackles than the inclusions. Certainly, cases could be argued for the German watches of Moritz Grossmann and Mühle Glashütte, or for the upstart independent brands Grönefeld and Romain Gauthier (both of whom are making incredible watches with dedicated collector communities).

Likewise, jewelry brands Van Cleef & Arpels and Harry Winston have some extremely complex and noteworthy watches in their collections. Doxa and Mido are brands with great histories that are making a comeback, while brands like Frédérique Constant and Raymond Weil offer points of entry for those new to mechanical watches. Countless other micro-brands have popped up over the last two or three years, with collectors launching their own companies to produce the watches they always wanted, usually in relatively small numbers and for like-minded enthusiasts.

The fifty brands included in this volume are those that are either important today, have historical significance, or are clearly up-and-coming. But as even these fifty top brands can be hard to keep straight, the following metaphor may help:

Think of an old European royal court. Patek Philippe is the king — stately, regal, and reserved. The king doesn't approve of fancy gimmicks or quick moves; he's solid, dependable — the top of the line.

Vacheron Constantin is the queen — flashy, sexy, and sometimes even startling. Audemars Piguet is the artist prince — bold, interesting, often more daring than others, always intriguing and often superb.

Jaeger-LeCoultre is the prime minister — shrewd, old, and reliable. Often behind the scenes, for years Jaeger-LeCoultre has been helping other companies survive thanks to its

manufacturing know-how. Jaeger-LeCoultre doesn't have the largest and fanciest line, but what it does, it does well and wisely.

Then there's Rolex, the knight — the strongest, most sturdy, and most trustworthy; Rolex will go into vigorous battle and come out none the worse for wear.

Breguet is the father of the king. Once the king himself, the company relinquished a leadership role many years ago but retains a regal appearance and an air of authority.

All the others are members of the court, but each serves a different role. A. Lange & Söhne is the young nobleman of distinguished heritage who may one day become king. Glashütte Original is Lange's lesser-known brother, who emulates him in many ways but strives to forge a path all his own. Nomos and Ochs und Junior are the local artisans, working in small rooms off the castle to create little marvels Merlin might enjoy, while MB&F and Urwerks are the alchemists, creating pure magic out of base elements. F.P. Journe is the rakish diplomat, IWC the stalwart advisor, and Elgin the long-lost American relative.

Here, then, are the members of the court of watches.

A. Lange & Söhne

Lange is a brand that is both rich in history and in a sense brand-new. The original company was established in 1868 in Glashütte, Saxony, by Adolf Lange (1815–1875) and his brother-in-law, Adolf Schneider, along with fifteen apprentices. Lange was a mechanical genius whose interest in machine tools propelled him to draw plans for innovative ways to manufacture watches. Following an apprenticeship to a famous clockmaker and keeper of the tower clock at the royal Saxon court in Dresden, he worked in Paris, England, and Switzerland. In 1842, after returning to Dresden, he married his former master's daughter and became co-owner of his father-in-law's business.

Lange was a man with a staunch social conscience, and to invigorate the economically blighted area, he helped create a watch *manufacture* in the nearby town of Glashütte, where he trained some of the local citizens in watchmaking skills. He soon steered his trainees into becoming specialists in manufacturing items such as screws, wheels, balance wheels, and hands. In so doing, Lange not only helped many become financially stable, but also was able to guarantee good relationships with local suppliers and thereby ensure freedom from dealing with more unpredictable foreign ones.

The firm quickly became well regarded for its beautiful pocket watches and eventually produced some stunning models, including a Grande Complication repeating pocket watch featuring a split-seconds chronograph, a perpetual calendar, and a moonphase indicator.

When Lange died in 1875, his sons took over the business, now known as A. Lange & Söhne. And although World War I hurt the luxury watch market, the company survived due, in part, to its production of high-precision marine chronometers.

In 1919, Adolf's son Emil turned the company over to his own sons, who continued the Lange tradition. In 1930, Richard Lange patented a hairspring alloy that included the addition of beryllium, an important development in the evolution of the temperature-stable hairspring alloys in use today.

On May 8, 1945, Russian bombs destroyed Lange's main production building. It was soon rebuilt, but on March 18, 1946, the new East German government expropriated the company, having declared the three Langes now running the firm to be Nazis and therefore war criminals. The Lange family vehemently denied the charges. Walter Lange, Adolph's great-grandson, refused to work for the outfit that had taken over the company and was told that he had to mine uranium; instead, he fled into an American-occupied zone in Bavaria.

Shortly afterward, the Lange name ceased to exist on watches. The outfit was now one of seven German companies organized into a combine under the name Glashütte Uhren-betrieben, or GUB, by the Communist government.

When Germany was reunited in 1990, Walter Lange returned to Glashütte, hoping to bring his family's company back to life. Four years later, with the financial backing of parent company LMH (Les Manufactures Horlogeres), the technical support of the other LMH brands (Jaeger-LeCoultre and IWC), as well as the marketing skills of revered IWC chief executive Günter Blümlein, Walter Lange was able to introduce the first line of Lange watches in a

generation. The new models — the Lange 1, Saxonia, Arkade, and Pour le Mérite — were produced under the company name Lange Uhren GmbH.

The revived firm manufactures its movement components using modern computer-aided tools, but it decorates the movements by hand to a very high level of finish. A large part of the charm of an A. Lange & Söhne timepiece is the experience of looking at the movement, where the untreated German silver three-quarter plate and bridges show their warm glow and the hand-engraved balance cock adds a completely unique touch to each and every watch. Additional little touches, such as the anachronistic inclusion of jewels set in screwed gold chatons, add additional historic character that makes A. Lange & Söhne's watches so special.

Richemont purchased LMH — and therefore Lange, IWC, and Jaeger-LeCoultre — in 2000, and in 2015 the company opened a larger, state-of-the-art manufactory building next door to the original in Glashütte, with the ribbon cutting attended by German Chancellor Angela Merkel.

Though the brand is a relative newcomer in its current incarnation, its watches sit in the horological stratosphere and are some of the very best made today (the Datograph is even regarded by many as *the* greatest chronograph ever created). Lange has come to rival Patek Philippe and Vacheron Constantin in the areas of design integrity, technical innovation, and thoroughness of decoration. Few, if any other, contemporary watch brands lavish the same level of attention on their entry level watches in comparison to their high-end pieces the way Lange does.

A. LANGE & SÖHNE DATOGRAPH (FRONT AND BACK), 2000s, platinum, hand-wound mechanical movement with chronograph and date

A. LANGE & SÖHNE GRAND LANGE 1 (FRONT AND BACK), 2000s, yellow gold, hand-wound mechanical movement with date and power reserve

A. LANGE & SÖHNE POUR LE MÉRITE, 1994, yellow gold, hand-wound mechanical movement with tourbillon and power reserve

A. LANGE & SÖHNE DOUBLE SPLIT, 2005, platinum, hand-wound mechanical movement with split-seconds and split-minutes chronograph and power reserve

A. LANGE & SÖHNE GRAND ARKADE, 2004, rose gold, hand-wound mechanical movement with big date

The Lange 1 is an important design not only for the company but for the industry in general, as it proved that well-thought-out, asymmetric designs could capture the imagination of the watch-buying public. When Günter Blümlein ran Lange, his company also owned IWC and Jaeger-LeCoultre. The big-date mechanism designed by JLC was exclusively reserved for Lange for a period of ten years, and helped establish the young brand, launching a trend that many other brands have since emulated.

A. LANGE & SÖHNE LANGE 1, c. 2000, platinum, mechanical movement with date and power reserve

A. LANGE & SÖHNE LANGE 1 TOURBILLON HANDWERKSKUNST, 2014, platinum, hand-wound mechanical movement with tourbillon and big date. Limited edition of twenty pieces with black enamel dial.

A. LANGE & SÖHNE DATOGRAPH PERPETUAL TOURBILLON, 2016, platinum, hand-wound mechanical movement with tourbillon, perpetual calendar, big date, moonphase, chronograph, and power reserve

A. LANGE & SÖHNE 1815 ANNUAL CALENDAR, 2007, rose gold, hand-wound mechanical movement with annual calendar and moonphase

A. LANGE & SÖHNE GRAND LANGE 1 "LUMINOUS," c. 2010, white gold, hand-wound mechanical movement with big date and power reserve

A. Lange & Söhne makes all of its movements entirely in-house at its factory in Glashütte. Over its decade and a half of modern operation, it has created more than 50 different calibers, including everything from simple time-only movements to exceedingly complex movements that mix complications such as the perpetual calendar, the tourbillon, the split-seconds chronograph, and even the minute repeater.

A. LANGE & SÖHNE ZEITWERK HANDWERKSKUNST, 2013, platinum, hand-wound mechanical movement with digital time display. Limited edition of thirty pieces with hand-engraved white gold dial

Audemars Piguet

Jules-Louis Audemars (1851–1918) and Edward-Auguste Piguet (1853–1919) formed this company based in Le Brassus, Switzerland, in 1875. Both men were watchmakers, but Audemars ran the production end while Piguet handled sales. The new company had a slow start; the duo didn't register their name until 1882, and the firm's official founding took place seven years later.

Because the partners manufactured all of their own components and assembled their watches in-house, they were able to maintain strict quality control, and the company quickly became known for producing excellent high-end, complicated timepieces, but not many: Between 1894 and 1899, Audemars Piguet manufactured barely twelve hundred watches.

The founders' deaths did not stop Audemars Piguet from continuing its tradition of complex timepieces. And, exploiting its experience in miniaturizing pocket watch functions, the company was quickly able to embrace wristwatches. By 1906, Audemars Piguet had produced a repeating wristwatch; in 1920, it introduced the world's smallest one. The company barely survived the Depression, but it recovered over the next decades, and by the 1950s was producing a highly successful line of excellent dress watches, including an ultra-thin model (powered by the famous *nine-ligne* Calibre 2003), chronographs, and even a small number of perpetual calendars, which are now highly sought after by vintage collectors due to their rarity and exceptional quality.

In 1967, in cooperation with Jaeger-LeCoultre, Audemars Piguet set a new record for the thinnest automatic movement (2.45 millimeters). Three years later, it introduced the world's thinnest movement (3.05 millimeters) to include a date indicator. (This baton would eventually be picked up again, and in 1986 Audemars Piguet introduced the world's thinnest automatic tourbillon, the Caliber 2870, which is just 4.8mm thick.)

However, by the late 1960s, sales had slowed and the company was at risk of closing its doors. Then, in 1972, Aude-mars introduced the Royal Oak luxury sport watch, named in honor of a trio of warships, which, in turn, were named after a hollowed-out oak tree where King Charles II once hid to elude enemies. The Royal Oak was the first luxury sport watch to be made of stainless steel. Created by eminent watch designer Gérald Genta, it featured an octagonal shape (mimicking a ship's porthole), prominent hexagonal screws, and an expertly crafted bracelet that was fully integrated into the case of the watch.

The Royal Oak seemed like a huge risk when it was first introduced. Who was going to pay luxury prices for a steel sport watch? It turned out to be one of the smartest moves any watch company has ever made. The model, in continuous production ever since, now comes in many varieties (and has spawned countless copy cats) and has been the core of Audemars Piguet's collection for decades. There are often long waiting lists to buy the most popular contemporary models, and extremely early Royal Oaks from the so-called "A Series" are some of the most sought after vintage watches today.

In 1993 Audemars Piguet introduced the Royal Oak Offshore, a larger version of the Royal Oak with a chronograph too. For much of the 2000s, Offshores were the watches of choice for hip-hop artists and athletes, and Audemars Piguet produced dozens of limited edition

Offshores in nearly every color scheme imaginable. The line developed a loyal following and there are collectors solely devoted to just Offshores.

Audemars Piguet is still family owned, and descendants of both the original Audemars and Piguets work at the company. It also maintains a register of every watch made and sold. One of the most well-respected of all brands, its line shows a great breadth of watches, from sports to dress watches, and from simple to enormously complicated.

The company's superb watchmakers and designers are constantly dreaming up new movements and complications. One of the reasons it can produce such wonderful complications is that it acquired Renaud & Papi (now Audemars Piguet Renaud & Papi), perhaps the best of the complications specialists.

An example of one such innovation is the Supersonnerie, introduced as a concept watch in 2014 and commercialized the following year. Using lessons learned from studying both antique pocket watches and the physics of acoustics, Audemars Piguet optimized both sound volume and sound quality, resulting in a wristwatch that sounds more like a music box.

When the conglomerate Richemont bought Jaeger-LeCoultre, Audemars Piguet, which owned 40 percent of the latter, received a large influx of cash; it used the money to upgrade its research and development, as well as marketing, and today the company has a state-of-the-art manufacturing facility in Le Brassus, just down the road from its original home, where the archive and restoration departments are still housed.

AUDEMARS PIGUET JULES AUDEMARS MINUTE REPEATER, 2017, platinum with blue enamel dial, hand-wound mechanical movement with minute repeater

AUDEMARS PIGUET MILLENARY REFERENCE 4101, 2012, rose gold, self-winding mechanical movement

AUDEMARS PIGUET TRADITION TOURBILLON MINUTE REPEATER CHRONOGRAPH, 2013, titanium, hand-wound mechanical movement with tourbillon, minute repeater, and chronograph

AUDEMARS PIGUET ROYAL OAK RD#2 PERPETUAL CALENDAR ULTRA-THIN, 2018, platinum with integrated platinum bracelet, self-winding mechanical movement with perpetual calendar

AUDEMARS PIGUET PERPETUAL CALENDAR WRISTWATCH, c. 1950s, yellow gold, hand-wound mechanical movement with perpetual calendar and moonphase

AUDEMARS PIGUET TOURBILLON AUTOMATIQUE, 1986, yellow gold, self-winding mechanical movement with tourbillon. This is the first serially produced wristwatch tourbillon. Audemars also created some groundbreaking design features to make it thin: The watch’s case is also the main plate of the movement.

AUDEMARS PIGUET REFERENCE 5504, 1948, yellow gold, hand-wound mechanical movement with triple calendar and moonphase

Audemars’s excellent history of reliable and interesting complications may derive from the fact that the company is located in Switzerland’s Vallée de Joux, which is also home to most of the high-complications ateliers.

AUDEMARS PIGUET REFERENCE 5043, 1954, yellow gold, hand-wound mechanical movement, dial signed by Swiss retailer Gübelin

AUDEMARS PIGUET JULES AUDEMARS CHRONOMETER WITH AUDEMARS PIGUET ESCAPEMENT, c. 2015, rose gold, hand-wound mechanical movement with proprietary, lubricant-free escapement

AUDEMARS PIGUET ROYAL OAK CONCEPT SUPERSONNERIE, 2017, titanium and black ceramic, hand-wound mechanical movement with tourbillon, chronograph, and high-tech minute repeater

AUDEMARS PIGUET ROYAL OAK, 1970, stainless steel, self-winding mechanical movement with date, integrated stainless steel bracelet

AUDEMARS PIGUET ROYAL OAK PERPETUAL CALENDAR, 2017, black ceramic, self-winding mechanical movement with perpetual calendar and moonphase, integrated ceramic bracelet

AUDEMARS PIGUET ROYAL OAK OPENWORKED SELFWINDING, 2013, stainless steel, self-winding mechanical movement

If any high-end brand is known for a singular iconic design, it’s Audemars Piguet for the Royal Oak. Since 1972, the Royal Oak case has housed everything from ultra thins to sophisticated complications. The Royal Oak Offshore, launched in the early 1990s, helped start the craze for extra-large watches.

AUDEMARS PIGUET ROYAL OAK, c. 1990, stainless steel and gold, mechanical movement with date

AUDEMARS PIGUET ROYAL OAK QUANTIÈME PERPÉTUEL, 1990s, stainless steel and gold, self-winding mechanical movement with perpetual calendar and moonphase

AUDEMARS PIGUET ROYAL OAK LA BOUTIQUE, 2005, titanium, self-winding mechanical movement with chronograph and date

AUDEMARS PIGUET ROYAL OAK OFFSHORE END OF DAYS, c. 2000, stainless steel with PVD coating, self-winding mechanical movement with chronograph and date

AUDEMARS PIGUET ROYAL OAK OFFSHORE, 1992, stainless steel, self-winding mechanical movement with chronograph and date

AUDEMARS PIGUET ROYAL OAK CONCEPT, 2002, alacrite with titanium bezel, mechanical movement with tourbillon and mainspring torque, power-reserve, and crown-function mode indicators; water-resistant to 500 meters

Baume & Mercier

In 1830, brothers Louis-Victor and Célestin Baume founded the Frères Baume *comptoir* (something of a combination workshop and retailer) in Les Bois, Switzerland. The pair quickly expanded beyond the small village to London, founding a subsidiary there to distribute pocket watches across the vast British Empire. In particular, the Baume brothers were known for making gold watches with chronometer-grade movements in them, which perfectly suited well-traveled Brits moving between the various colonies.

Things continued fairly steadily until 1918, when Louis-Victor's grandson William Baume partnered with a Russian émigré named Paul Mercier and the company became Baume & Mercier. The two wanted to pursue the then-emerging wristwatch market, making both traditional round watches and those of more unusual shapes (with its square-cased chronographs being the most well-regarded by vintage collectors). Just a year later, the two were first awarded the Geneva Seal for making exceptional timepieces in the Canton of Geneva.

The golden era for Baume & Mercier was the 1940s through 1960s, when the brand produced exceptional chronographs and calendar watches, many with multi colored dial printing, fancy lug cases, and beautiful moonphase indicators. These watches serve as the inspiration for the Clifton collection, the core of the company's modern portfolio.

Although the Riviera was one of the first all stainless steel sport watches, the model's popularity waned and it never gained the same long-term traction as the Audemars Piguet Royal Oak released just one year earlier, in 1972, or the Patek Philippe Nautilus.

The firm was acquired by the Richemont group in 1988, and for a decade or so after, the company had the reputation of being the less expensive, younger sibling of Cartier. However, today, the company's watches bear little resemblance to those of the Parisian *maison* and it has developed a reputation all its own. Baume & Mercier became the first Richemont-owned watchmaker to employ a silicon balance spring with the introduction of the Clifton Manual 1830 in 2017. The new movement and its silicon balance have potentially huge implications not just for Baume & Mercier but also for all of its sibling companies, offering more advanced technology and reduced dependence on third-party suppliers from rival conglomerates.

BAUME & MERCIER CLIFTON BAUMATIC, 2018, stainless steel, self-winding mechanical movement with proprietary Twinspir silicon balance spring

BAUME & MERCIER CLIFTON CLUB, 2017, stainless steel, self-winding mechanical movement with date

BAUME & MERCIER CLIFTON CHRONOGRAPH CALENDAR, 2016, stainless steel and rose gold, self-winding mechanical movement with day, date, month, 24-hour scale, moonphase, and chronograph

BAUME & MERCIER CLIFTON MANUAL 1830, 2017, rose gold, hand-wound mechanical movement with proprietary Twinspir silicon balance spring

BAUME & MERCIER REFERENCE 1919, c. 1950s, stainless steel, hand-wound mechanical movement with month, day, date, moonphase, and chronograph

BAUME & MERCIER CAPELAND CHRONOGRAPH, 2011, stainless steel, self-winding mechanical movement with flyback chronograph and date

Bell & Ross

It sounds English or American, but Bell & Ross is actually a French company, named for its continental founders, Bruno Belamich and Carlo Rosillo. Now twenty-five years old, the company creates watches targeted at professionals such as divers, pilots, bomb disposal experts (which, admittedly, doesn't seem like a very large market) and the like, as well as those who aspire to wear the same function-first tools used in these high-pressure situations.

Its watches were originally produced by the German company Sinn and many models were simply modified versions of watches from Sinn's collection. In 1997, however, Chanel became a minority shareholder in Bell & Ross and the company began making its own watches in 2002, when it dissolved its partnership with Sinn and moved to manufacturing at its own facility in Switzerland.

Hallmarks of the French firm's watches are their highly readable dials, usually featuring large numerals and hands, and their nearly bulletproof construction. Bell & Ross has become synonymous with the rise of square watches that are meant to resemble the instruments found in airplane cockpits, which began with the introduction of the BR 01 in 2005 and has continued to this day with various BR collections with different sizes of cases, types of movements, and styles of dials. More than a decade later, in 2017, the company released the BR-X2 Tourbillon Micro-Rotor, the most complicated BR watch to date, which includes an ultra-thin skeletonized movement and sections of the case made from sapphire glass.

Additionally, Bell & Ross is well respected for its vintage-inspired collections of pilot's watches that resemble those of the mid-twentieth century, and its jumping-hour models, which are extremely unique and strikingly modern despite the supposed influence of early twentieth-century timekeepers.

BELL & ROSS WW1 HEURE SAUTANTE, 2012, platinum, self-winding mechanical movement with jumping hour and power reserve

BELL & ROSS WWI REGULATEUR, 2013, rose gold, self-winding mechanical movement with regulator-style display

BELL & ROSS BR 123 SPORT HERITAGE, 2014, stainless steel, self-winding mechanical movement with date

BELL & ROSS BR-X2 TOURBILLON MICRO-ROTOR, 2017, stainless steel and sapphire, self-winding mechanical movement with tourbillon

BELL & ROSS AUTOMATIC CHRONOGRAPH, c. 2000, titanium, self-winding mechanical movement with chronograph and date

BELL & ROSS BR 01-94 B-ROCKET, 2014, stainless steel, self-winding mechanical movement with chronograph and date

BELL & ROSS BR 01-92 STEEL, 2000s, stainless steel, self-winding mechanical movement

Blancpain

Like many highly renowned Swiss companies, the original Blancpain (which the company claims was founded in 1735), fell on hard times during the mid-twentieth century. The last member of the Blancpain family died in 1932; for decades afterward, Blancpain watches were produced by Rayville. Eventually, the company passed into the hands of SSIH, composed primarily of Omega and Tissot, which closed it down, despite the success of many of its models, including its excellent dive watches that were used by various international Navies in the 1950s and 1960s.

Blancpain was resurrected in 1983 by Jean-Claude Biver, then an Omega executive, and Jacques Piguet, a scion of one of Switzerland's most distinguished watchmaking families.

Biver purchased an old farmhouse in Le Brassus and, with Piguet, started turning out highly crafted mechanical watches with simple round cases and automatic movements. Throughout the 1980s, the company grew in reputation and sales. In the early 1990s, Blancpain realized its ambitious goal of producing six masterpieces of watchmaking, each with a different complication: an ultra-slim movement, a moonphase indicator, a split-seconds chronograph, a perpetual calendar, a minute repeater, and a tourbillon. Not long afterward came a single watch containing all six complications.

Blancpain's moonphase indicator is one of its trademarks, found in many of its gold-cased calendar watches such as the Villeret collection. But the company also makes more technically innovative watches, such as one of the world's smallest self-winding chronographs, the Quattro, which has a tourbillon, flyback chronograph, split-seconds mechanism, and a perpetual calendar.

In 1992, the Swatch Group — the descendant of SSIH — purchased Blancpain for approximately a thousand times the amount Biver had paid to buy the name a decade earlier. Biver has since left and gone on to be the head of luxury watchmaking for LVMH.

Today the brand is once again best known for its dive watches, including the Fifty Fathoms and Bathyscaphe. Aesthetically they are very similar to the originals from the mid-twentieth century, but they now make use of high-tech materials like ceramic, sapphire, and silicon and are much larger. Production is still executed the traditional way at Blancpain, with a single watchmaker building each final watch instead of working on an assembly line.

The company is very proud of its claim that it has never made a quartz watch, which can in large part be traced to the firm having been shuttered during the era of quartz's prominence before it become a standard bearer for the resurrection of traditional mechanical watchmaking.

BLANCPAIN VILLERETE QUANTIÈME COMPLET, stainless steel, self-winding mechanical movement with day, date, month, and moonphase

BLANCPAIN BATHYSCAPHE CHRONOGRAPH FLYBACK "OCEAN COMMITMENT," 2014, ceramic, self-winding mechanical movement with chronograph and date

BLANCPAIN LE BRASSUS TOURBILLON CARROUSEL, 2013, rose gold, hand-wound mechanical movement with tourbillon, carrousel, and date

The famous Fifty Fathoms was commissioned by two French navy officers, who specified such details as the revolving bezel, screw-down crown, and luminous materials. Jacques-Yves Cousteau was among the many fans of this watch, which became one of the most influential of all divers' timepieces. Fifty fathoms — 91.45 meters — was the maximum dive depth for a diver using the standard scuba equipment available in the early 1950s.

BLANCPAIN TRIBUTE TO FIFTY FATHOMS MIL-SPEC, 2017, steel, self-winding mechanical movement with date

BLANCPAIN FIFTY FATHOMS MILSPEC 1, 1960s, stainless steel, self-winding mechanical movement; water resistant to 91.45 meters

BLANCPAIN FIFTY FATHOMS, 1953, stainless steel, self-winding mechanical movement; water resistant to 91.45 meters

BLANCPAIN VILLERET 20IEME ANNIVERSAIRE DE LA PHASE DE LUNE self-winding mechanical movement

BLANCPAIN VILLERET EQUATION MARCHANTE self-winding mechanical movement

BLANCPAIN CALIBER 1150 self-winding mechanical movement

BLANCPAIN PLATINUM MASTERPIECE COLLECTION, 1990s, boxed set of six watches

Though the finishing on Blancpain’s movements is always high quality, the style of decoration varies greatly across its different families of watches. The Villeret and Le Brassus watches feature bright polishing, Geneva stripes, and sometimes hand engraving, while the Fifty Fathoms watches are more understated, with dark finishes and grained surfaces. Blancpain is one of the only manufactures to have a single watch-maker assemble each movement from start to finish.

BLANCPAIN VILLERET TOURBILLON SQUELETTE 8 JOURS, 2012, platinum, hand-wound skeletonized mechanical movement with tourbillon, date, and power reserve

Breguet

If one person were to stand at the pinnacle of the pantheon of watchmakers, it would have to be Abraham-Louis Breguet (1747–1823).

When he was fifteen years old, Breguet moved from his native Switzerland to Paris, where he did most of his best work (although he did return to his home country during the tumultuous French Revolution).

Among other achievements, Breguet helped develop the automatic watch, originated the gong spring for a minute repeater (previous watches had sounded on a bell), invented the tourbillon, introduced critical advancements to the lever escapement, pioneered the use of the overcoil hairspring, designed one of the earliest shock protection devices, and helped create the keyless watch (at the time, all watches were wound and adjusted by an external key).

To this day, so many mechanisms and design features carry the Breguet name it's difficult to separate true inventions from inventive claims.

Breguet was also the watch world's first celebrity. A watch with a Breguet signature was worth a premium over others (part of the reason Breguet was the first watchmaker whose work was counterfeited). Writers from Alexandre Dumas to Jules Verne have referred to Breguet in their novels; Marie Antoinette, Louis XVI, the tsar of Russia, the sultan of the Ottoman Empire, and the prince-regent of England all bought watches from him.

Breguet launched his firm in 1775, when his marriage to a wealthy woman gave him the means to open his own workshop. It was highly successful. When Abraham-Louis died, his son Antoine-Louis took over. In turn, Antoine's son, Louis-Clement, later ran the firm; Louis-Clement was a renowned scientist who eventually decided he preferred studying electricity to watchmaking and sold the company to Edward Brown, a Breguet workshop manager. (Louis-Clement Breguet's descendants went on to do pioneering work in the aeronautics industry, though today Emmanuel Breguet, a seventh-generation descendant of Abraham-Louis, is once again involved with the brand, curating the archives in Paris.)

The Brown family owned Breguet until 1970, when Parisian jewelers Jacques and Pierre Chaumet bought the brand to give it new life; the company was then bought and sold multiple times in the 1980s and 1990s before being acquired by Swatch Group in 1999.

In the last few decades, Breguet watches have become renowned for their beautifully hand-engraved, silver plate over gold dials and stunning cases with reeded edges; this style was drawn from the master's original pocket watches, though updated to fit modern production techniques.

Though best known for its dress watches — especially those in the Tradition and Classique collections featuring complex calendar displays and tourbillons — Breguet has a long history making chronographs as well. Its Type XX aeronautical chronograph was used by the French Air Force in the 1950s, and today a range of sport watches inspired by these originals is still a best seller.

Breguet has continued to invest heavily in developing its own movements, especially complicated movements (it acquired movement maker Lemania in the early 1990s, which was

folded into the brand as a part of the Swatch Group). Achievements include oversized tourbillons, fusée-and-chain mechanisms, high-frequency escapements, astronomical complications, and musical chiming watches.

BREGUET HEURES SAUTANTES, 1990s, platinum, self-winding mechanical movement

BREGUET TRADITION FUSÉE TOUR-BILLON 7047, 2012, rose gold, hand-wound mechanical movement with silicon balance spring, tourbillon, and fusée-and-chain mechanism

BREGUET TRADITION 7057, 2014, rose gold, hand-wound mechanical movement with power reserve

BREGUET CLASSIQUE REGULATOR, 1998, platinum, self-winding mechanical movement with regulator display and date

BREGUET TYPE XX AÉRONAVALE, 2010, stainless steel, self-winding mechanical movement with flyback chronograph

BREGUET EQUATION OF TIME, c. 2000, platinum, self-winding mechanical movement with perpetual calendar, equation of time, and power reserve

Abraham-Louis Breguet is widely recognized as the greatest watch-maker who ever lived. The company he started, however, has had its share of ups and downs. In the 1970s and 1980s watchmaker Daniel Roth helped create its modern look. Roth's design concepts were influenced by Breguet pocket watches from the early nineteenth century; he adapted the coin-edge case, the signature Breguet hands, the solid-gold guillochet dial, and an array of classic complications associated with the founder.

BREGUET, 1990s, yellow gold, mechanical movement with moonphase and power reserves

BREGUET, 1990s, yellow gold, mechanical movement

BREGUET, 1990s, yellow gold, self-winding mechanical movement with perpetual calendar and moonphase

BREGUET TOURBILLON 1801–2001 (OPEN AND CLOSED), 2001, white gold half-hunter case, mechanical movement with tourbillon

BREGUET, 1990s, yellow gold, mechanical movement with tourbillon, and power-reserve and retrograde 24-hour indicators

BREGUET TOURBILLON SQUELETTE, late 1990s, white gold, mechanical movement with tourbillon

Abraham-Louis Breguet created numerous timepieces with off-center dials and so does the modern company, especially for complications. Likewise, Breguet makes a wide range of tourbillons, as Breguet the man invented the device in 1801 to counteract the effects of gravity on the escapement.

BREGUET CLASSIQUE COMPLICATIONS, 2003, white gold, hand-wound mechanical movement with tourbillon

BREGUET CLASSIQUE TOURBILLON QUANTÈME PERPÉTUEL 3795, 2014, rose gold, hand-wound skeletonized mechanical movement with tourbillon and perpetual calendar

BREGUET CLASSIC TOURBILLON EXTRA-PLAT AUTOMATIQUE 5377, 2014, rose gold, self-winding, extra-thin mechanical movement with tourbillon and power reserve

Breitling

Founded in 1884 by Léon Breitling (1860–1914), this company built its reputation on aviation-themed timepieces such as cockpit clocks and pilots' watches. Its most famous model of the latter is the Navitimer, first introduced in 1952 and worn by pilots today.

The Navitimer is still being manufactured and now comes in many varieties, including the Aerospace, which features both analog hands and two digital displays. Another of the company's most famous models, from 1947, is the Chronomat — the first watch fitted with a circular slide-rule bezel.

The company's fame grew when, in 1962, astronaut Scott Carpenter wore his Breitling in space; in honor of this event, the model was dubbed the "Cosmonaute."

Like most Swiss companies, Breitling suffered greatly during the quartz era, but Sicura company executive Ernest Schneider bought it in 1979 and steered the firm into recovery. Today, it continues to sell solid chronographs and other complicated timepieces.

Two of its current lines are the Emergency (which can send out a radio signal if its owner is lost) and the Colt Super-ocean, which is waterproof to 100 ATM and COSC-rated. Breitling vintage watches tend to hold their value well.

BREITLING TRANSOCEAN CHRONOGRAPH 1915, 2015, stainless steel, hand-wound mechanical movement with chronograph and date

BREITLING CHRONO-LINER B04 BOUTIQUE EDITION, 2017, stainless steel, self-winding mechanical movement with chronograph, GMT complication, and date

BREITLING COLT SKYRACER, 2017, Breitlight polymer, SuperQuartz movement with date

BREITLING NAVITIMER, early 1960s, stainless steel, self-winding mechanical movement with chronograph

BREITLING SUPEROCEAN REFERENCE 2005, 1966, stainless steel, hand-wound mechanical movement with unusual slow-moving chronograph complication

BREITLING PREMIER REFERENCE 765, c. 1946, stainless steel, hand-wound mechanical movement with chronograph

BREITLING EMERGENCY, late 1990s, titanium, quartz movement with chronograph, perpetual calendar, world time, alarm, and micro-antenna with aviation emergency frequency

BREITLING TOP TIME REFERENCE 2000, c. 1960s, rose gold plated stainless steel, hand-wound mechanical movement with chronograph

BREITLING EXOSPACE B55 CONNECTED, 2016, titanium, SuperQuartz movement with Bluetooth connectivity

BREITLING NAVITIMER RATTRAPANTE, 2017, rose gold, self-winding mechanical movement with split-seconds chronograph and date

Bulgari

Bulgari, the world's third-largest jewelry producer after Cartier and Tiffany, has sold watches for many decades. Established over one hundred years ago in Rome by Greek silversmith Sotirio Bulgari (1857–1932), in 1977 the company hired famed watch designer Gérald Genta to create his own line of distinctive watches with a Bulgari look. Genta produced the Bulgari-Bulgari, featuring the company's name written twice on the bezel.

Drawing on a jewelry design dating back to the 1940s, Bulgari also produced snake-shaped Serpenti watches in dozens, if not hundreds, of variations since the 1960s. These vary from the simple Tubogas models, which use flexible coils of metal as the strap, to extremely ornate models with flexible body segments made of precious metal, gems, and colored enamel. While modern examples use quartz movements, those from the 1960s and 70s typically utilized miniature hand-wound movements from the likes of Vacheron Constantin and Jaeger-LeCoultre.

Since acquiring the Gérald Genta and Daniel Roth brands in 2000, Bulgari has made a serious push into the world of fine timepieces and the company is now making its own movements specifically for its unique designs. In particular, the Octo collection contains multiple high-complication and record-setting watches in the realm of ultra-slim watch-making. The Octo Finissimo Minute Repeater was the thinnest minute repeater in the world when introduced in 2016, and the following year the Octo Finissimo Automatique took the title of the world's thinnest automatic watch.

BULGARI BULGARI SOLO TEMPO, 2013 stainless steel, self-winding mechanical movement with date

BULGARI ALUMINUM, 1990s, aluminum, self-winding mechanical movement with date

First launched in 2012, the Octo has since become something of a flagship collection for Bulgari. It is defined by its faceted shape, with the eight-sided bezel that combines both round and angular forms. It has also served as the home for Bulgari's ultra-thin movements since 2014, a place where the brand has really created a niche for itself.

BULGARI OCTO FINISSIMO SKELETON, 2017, titanium, self-winding ultra-thin mechanical movement

BULGARI OCTO FINISSIMO AUTOMATIQUE, 2017, titanium with titanium bracelet, self-winding ultra-thin mechanical movement

BULGARI OCTO FINISSIMO MINUTE REPEATER, 2016, titanium, hand-wound mechanical movement with minute repeater

Bulova

Bulova was once one of the great American watch brands, but like many others, it stumbled badly in the second half of the twentieth century. Joseph Bulova (1852–1935), its Bohemian-born founder, nonetheless created a company whose name is still among the most familiar in the business.

Starting as a small jewelry store on New York City's Maiden Lane, Bulova grew into a large watch and clock outfit; by 1931, it was running the watch industry's first million-dollar advertising campaign.

Using movements imported from Switzerland and cased in America, the company thrived, and Joseph's son Ardé took over the reins. During World War II, Bulova supplied the American government with military watches, specialized timepieces, aircraft instruments, critical torpedo mechanisms, and fuses.

More important to the history of watches, in the late 1940s the company started the Joseph Bulova Watchmaking School for veterans of World War II, graduating a large number of excellent watchmakers. (General Omar Bradley, in fact, served as the Chairman of the Board of Bulova in 1958–1973, furthering the brand's commitment to serving veterans.)

Ardé Bulova was an innovative thinker who became fascinated with the idea of a battery-powered watch. In the late 1950s, with the help of a Swiss engineer, the company developed the Accutron, an electronic watch with a mechanism based around a tiny tuning fork that is considered the forerunner to the quartz watch. The Accutron was an enormous success and came in many models, including the skeletonized Spaceview. In the 1964 movie *Seven Days in May*, the camera pans in on a close up of Kirk Douglas wearing a Bulova Accutron Astronaut, another popular Accutron model.

Perhaps because of the Accutron's success, the company was less enthusiastic about developing quartz watches (although it did eventually produce a quartz Accutron). As a result, the company floundered, and in 1979 it was taken over by the Loews Corporation. The company remained in continuous operation, making mostly mass-market watches, until Japanese watch conglomerate Citizen acquitted Bulova in 2008, making it the largest watchmaker in the world.

Under Citizen, Bulova has begun to innovate again, though in the realm of quartz watches rather than mechanical ones. The Precisionist line uses special quartz movements that function at a frequency eight times that of typical quartz watches, resulting in much greater accuracy over time. Building on this high-frequency technology, in 2016 Bulova introduced the Curv chronograph, the first quartz chronograph to ever feature a curved movement, allowing it to be slimmer and worn closer to the wrist.

BULOVA WRIST-ALARM, 1953, yellow gold, mechanical movement with alarm

BULOVA, 1960s, stainless steel, self-winding mechanical movement with date; water resistant to 2 meters

BULOVA, late 1920s, white and yellow gold filled, mechanical movement

BULOVA, late 1920s, white and yellow gold filled, mechanical movement

BULOVA ACCUTRON SPACEVIEW, 1965, yellow gold filled, electric movement

BULOVA LUNAR PILOT CHRONOGRAPH, 2016, stainless steel, high-frequency quartz movement with chronograph and date

CURV CHRONOGRAPH, 2016, titanium and stainless steel, curved high-frequency quartz movement with chronograph

Cartier

While Cartier is first and foremost a design house and jewelry company, it can also claim a significant history of watch-making upon which it continues to build today.

Cartier was founded in 1847 by Louis-François Cartier (1819–1904), a master goldsmith and jeweler who, like Abraham-Louis Breguet, became a favorite of the aristocracy. His particular patron was Princess Mathilde, the cousin of Napoleon III; he also sold the Empress Eugenie a silver tea service in 1859.

In the same year, Cartier set up shop in one of Paris's most fashionable neighborhoods, where the company thrived. In 1874, son Alfred Cartier (1841–1925) took over — but it was Alfred's son Louis (1875–1942) whose marketing skill transformed the business into an international success with shops around the world.

The company had long made and sold pocket watches, but Louis Cartier, a great admirer of the mechanical watch, wanted his own line. Intrigued when Brazilian aviation pioneer Alberto Santos-Dumont (1873–1932) requested a watch he could use while flying, Cartier created the Santos wristwatch (1906), one of the first designed specifically for men.

In 1917 another influential design appeared when Cartier introduced the Tank watch, fashioned in the shape of tank tracks. With its rectangular profile and radiating Roman numerals, the Tank is one of the most iconic watches of all time, having been worn by all manner of celebrities and public figures; in the 1921 movie *The Son of the Sheik*, Rudolph Valentino playing a desert Arab wore his Cartier Tank at his own insistance, and Andy Warhol often spoke about how he never wound any of his Tanks, instead wearing them purely for fashion's sake.

A few years later, Cartier formed a joint venture with Edward Jaeger to produce movements for Cartier (soon thereafter Jaeger joined the company LeCoultre to form Jaeger-LeCoultre). Cartier also used movements from Vacheron Constantin, Audemars Piguet, and Movado, the latter especially for the company's triple-date watches.

Louis Cartier died in 1942, and the company faltered. It was eventually broken into several smaller companies, but was rescued by a group of investors who, from 1972 to 1979, reunified the pieces into Cartier Monde SA. Then, in 1988, Cartier purchased 60 percent of Piaget (which itself owned Baume & Mercier); soon Cartier Monde was renamed the Vendome Luxury Group (later called the Richemont group) when it merged with Dunhill's non-tobacco division.

Since 2005, master watchmaker Carole Forestier-Kasapi has been Cartier's director of movement creation, leading the company's high watchmaking division. A French woman operating in a sea of Swiss men, Forestier-Kasapi is one of today's most brilliant watchmakers. From watches with completely circular perpetual calendar indicators to skeletonized minute repeaters and more, she has helped Cartier become a true leader in the field of *haute horlogerie*, while also developing reliable in-house movements to power the company's higher volume watches.

Cartier has continued to create new shapes and styles of watches — the area in which it

historically excelled. The sporty Calibre de Cartier family includes chronographs with in-house movements and robust dive watches with ceramic bezels, and the Drive de Cartier has a softened cushion shape that gives the watch an unusual profile.

CARTIER TANK AMÉRICAINE, 2017, stainless steel, self-winding mechanical movement

CARTIER TANK, belonging to Jacqueline Kennedy Onassis sold for $379,500 at Christie’s in June 2017.

CARTIER CALIBRE DE CARTIER DIVER, 2015, black ADLC stainless steel, self-winding mechanical movement with date

CARTIER CALIBRE DE CARTIER CHRONOGRAPH, 2013, stainless steel, self-winding mechanical movement with chronograph and date

CARTIER ROTONDE DE CARTIER ANNUAL CALENDAR, 2015, white gold, self-winding mechanical movement with annual calendar

CARTIER CLÉ DE CARTIER, 2015, rose gold, self-winding mechanical movement with date

CARTIER COLLECTION PRIVÉE TORTUE, 2004, platinum, self-winding mechanical movement with perpetual calendar and second time zone

CARTIER ROTONDE DE CARTIER ASTROMYSTÉRIEUX, 2016, palladium, hand-wound mechanical movement that rotates within the case once per hour.

CARTIER ROTONDE DE CARTIER ASTROCALENDAIRE, 2014, platinum, self-winding mechanical movement with tourbillon and circular perpetual calendar display

CARTIER CEINTURE AUTOMATIQUE, 1972, yellow gold, self-winding mechanical movement

CARTIER GONDOLE, made c. 1975 for the sultana of Oman, yellow gold, mechanical movement

CARTIER VENDÔME AUTOMATIQUE, 1980s, white gold, self-winding mechanical movement

CARTIER MONETA, 1946, yellow gold, mechanical movement

CARTIER DRIVE DE CARTIER EXTRA-FLAT, 2017, rose gold, hand-wound mechanical movement

CARTIER DRIVE DE CARTIER, 2016, stainless steel, self-winding mechanical movement with date

CARTIER COLLECTION PRIVÉE TORTUE CHRONOGRAPH MONOPOUSSOIR, c. 1998, white gold, hand-wound mechanical movement with monopusher chronograph

CARTIER BAGNOIRE, 1960s, yellow gold, hand-wound mechanical movement

As the legend goes, the Cartier Crash was first created by accident after a client’s Baignoire watch was melted and mangled in a car crash. It was brought in to Cartier London for repair and ended up becoming the inspiration for a new model. The Crash debuted in 1967 and immediately became a cult classic. It has been reinterpreted in various ways over the years, but the originals remain exceedingly rare.

CARTIER CRASH, 1960s, yellow gold, hand-wound mechanical movement

CARTIER CRASH SKELETON, 2015, platinum, openworked hand-wound mechanical movement

CARTIER TANK CHINOISE, 1930s, yellow gold, hand-wound mechanical movement

CARTIER TANK AUTOMATIC, 1970s, white gold, self-winding mechanical movement, white gold “beads of rice” bracelet

CARTIER TANK A GUICHET JUMP HOUR, 1997, platinum, hand-wound mechanical movement with jumping hours and wandering minutes displays

CARTIER TANK "REVERSO," c. 1970s, yellow gold, hand-wound mechanical movement, articulated reversible case

CARTIER TANK CINTRÉE, 1970, yellow gold, hand-wound mechanical movement, gold “beads of rice” bracelet

CARTIER TANK CINTRÉE SKELETON, 2017, platinum, openworked hand-wound mechanical movement with curved profile

CARTIER TANK BASCULANTE “MILLENIUM EDITION,” 2000, yellow gold, hand-wound mechanical movement, case with swiveling mechanism

CARTIER TANK MC, 2013, stainless steel, self-winding mechanical movement with date

CARTIER TANK MC SKELETON, c. 2013, palladium, skeletonized self-winding mechanical movement

Chopard

Better known for its jewelry than its watches, Chopard was founded in 1860 by Louis-Ulysse Chopard (1836–1915) and made excellent pocket watches that were long favored by railroad employees; the company was also famous for its jewelry-studded timepieces. But in the 1960s it needed help staying afloat, so the Scheufele family of Pforzheim, Germany, with a background in jewelry and timepieces, took the helm, and still run it today.

Many of Chopard's watches borrow from the aesthetic of the company's high jewelry lines and are highly decorated with diamonds and other precious stones; Happy Sport, one of its most successful lines for women, features loose diamonds between the crystal and the dial.

In recent years, Chopard has returned to serious watch-making as well. In 1996, the L.U.C collection (named in honor of the company's founder) was launched with the assistance of famed watchmaker Michel Parmigiani. These watches feature movements designed and manufactured in-house at the Chopard Manufacture in Fleurier, and the collection includes everything from time-only models with highly decorated micro-rotor movements to extremely complicated models with tourbillons and perpetual calendars. Amongst aficionados, these watches are highly regarded.

In 2015, Chopard launched a sister brand, Ferdinand Berthoud, focused on producing high-precision timepieces that reinterpret historic styles of watchmaking. The brand's first model, the Chronomètre FB, is a chronometer featuring both a tourbillon and a fusée-and-chain mechanism to maximize precision. Watches like this are as much thought experiments about mechanical timekeeping as a discipline as they are commercial products.

Chopard also has a long history of good works. It has created watches whose profits support tenor Jose Carreras's Carreras Foundation and rock star Elton John's AIDS Foundation. Additionally, Chopard is one of the only watch manufacturers to have its own gold foundry, and the company produces special editions made with Fairmined gold to support ethical labor practices in the watch and jewelry industries.

L.U.C TIME TRAVELER ONE, 2017, stainless steel, self-winding mechanical movement with GMT and world time displays

CHOPARD L.U.C XPS TWIST QF FAIRMINED, 2017, ethically sourced rose gold, self-winding mechanical movement

CHOPARD MILLE MIGLIA 2017, 2017, stainless steel, self-winding mechanical movement with chronograph and date

CHOPARD L.U.C PERPETUAL TWIN, 2016, stainless steel, self-winding mechanical movement with perpetual calendar

L.U. CHOPARD
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L.U.C FULL STRIKE, 2016, rose gold, hand-wound mechanical movement with minute repeater

CHOPARD L.U.C 1.96 (FRONT AND BACK), 2000s, yellow gold, self-winding mechanical movement with date

CHOPARD L.U.C SPORT 2000 (FRONT AND BACK), 2000, stainless steel, self-winding mechanical movement with date

Citizen

The Japanese company Citizen is the world's largest watch-maker. Founded in Tokyo after World War I, the brand was so named to evoke the image of a company whose products can be bought by anyone, anywhere, for a good price, at a time when watches were still luxury items in Japan. Unlike the Swiss companies that faced extinction during the quartz revolution, by the mid-1970s Citizen was producing vast numbers of well-made quartz watches and was winning many awards for innovation in their design and manufacture. The company's movements come from a subsidiary, Miyota, and are produced in enormous numbers and variations (both for internal use and sales to third parties, at home and abroad).

Citizen has created the world's smallest quartz movement, radio-controlled movements that synchronize to atomic clocks, and the light-powered Eco-Drive movements, which have become one of the company's flagship product lines. In 2017, Citizen introduced the Eco-Drive One, the world's thinnest light-powered watch, which is just 2.98mm thick.

The company also boasts the most accurate (non-radio-controlled) wristwatch in the world: The Citizen. A quartz perpetual calendar, it is guaranteed accurate to plus or minus five seconds per year (though it's worth noting that The Citizen is only available in Japan). Citizen watches are not widely collected outside of Asia; they are, however, extremely popular as reliable, inexpensive timepieces all around the world.

CITIZEN PROMASTER 1000M PROFESSIONAL DIVER, 2017, titanium, solar-powered quartz movement with power reserve and date

CITIZEN CAMPAGNOLA, 2000, stainless steel, quartz movement with perpetual calendar

CITIZEN QUARTZ CYSTRON SOLAR CELL, 1976, stainless steel, quartz movement with date

CITIZEN CYSTRON MEGA QUARTZ, 1975, gold, quartz movement with day and date. This watch tested accurate to ± 3 seconds per year

CITIZEN QUARTZ EXCEED GOLD, 1978, gold, quartz movement; thinner than 1 mm

CITIZEN CHRONO-MASTER THE CITIZEN, 1995, yellow gold, quartz movement with date; guaranteed accurate to ± 5 seconds per year

Eberhard

Founded by Georges-Émile Eberhard in 1887, Eberhard has long been a timekeeper for sporting events — especially car races, but also for aviation and navigation. In 1919, the company introduced its first chronograph wristwatch. Five years later, it brought out its chronograph with two push-buttons, and in 1939 it launched a chronograph rattrapante. In the 1930s, the brand was the official supplier of chronographs to the Italian Navy (with Panerai supplying dive watches).

Today the brand is best known for the Chrono 4, a chronograph with four smaller dials lined up straight across the bottom or along the side of the dial, which comes in many different versions. However, Eberhard also has a pair of vintage-inspired product lines, the Contograf and Scafograf, which in turn draw from mid-century racing chronographs and dive watches.

Eberhard is a favorite among vintage collectors looking to obtain complicated and unusual watches at favorable prices. So-called “Pre Extra-Fort” chronographs from the 1940s can be found with two-tone dials, unusual printed scales, and oversized cases that make them extremely appealing. Eberhard split-seconds chronographs from the same era can also be bought for a fraction of the price of similar watches made by brands like Patek Philippe.

EBERHARD CONTOGRAPF, c. 1970s, stainless steel, hand-wound mechanical movement with chronograph and date

EBERHARD CHRONOGRAPH, c. 1940s, yellow gold, hand-wound mechanical movement with chronograph

EBERHARD CONTOGRAF, c. 1962, stainless steel, hand-wound mechanical movement with chronograph and date

EBERHARD CHRONO 4, 2000s, stainless steel, self-winding mechanical movement with chronograph and date

Elgin

Elgin, along with brands such as Bulova, Illinois, Waltham, Gruen, and Hamilton, was one of the great American watch manufacturers. Founded in Elgin, Illinois, in the penultimate year of the Civil War, the company soon produced more watches than any other in the United States. Elgin also founded a watchmakers' college and built an observatory to broadcast astronomical time signals.

By the 1920s about half of Elgin's manufacturing output was wristwatches (the other half was pocket watches); for many years this made it the country's leading source of wristwatches (companies such as Hamilton were producing far more pocket watches). In particular, the company's Lord Elgin line of higher-end models was a strong commercial success.

During World War II, Elgin made military equipment such as shell fuses and military clocks; after the war it tried to return to serving its prewar market but foundered. Timex (the former Waterbury Watch Company) took over the low end of the marketplace, and Elgin couldn't come up with a competitive strategy. It tried various ideas, such as marketing an electric watch, but was not as successful as Bulova with its Accutron model. Soon Elgin began closing its plants, and in the 1960s, was forced out of business. Since then the name Elgin has been bought and sold, and today it is attached to a series of watches with Japanese quartz movements.

Overall, in its heyday, Elgin produced about sixty million watches, meaning that there are plenty of old models available to collectors. These are far more popular in the United States than in Europe or Asia, and at any moment thousands of old Elgins are available online at eBay and other websites. Some of them can go for surprisingly high prices, especially the 1930s-era doctor's duo-dials and the 1950s-era anniversary watches, which are cased in 18-karat gold, but it is also possible to purchase for surprisingly little a humble Elgin mechanical watch that has run for almost a century and, with normal maintainance, will run for another one.

LORD ELGIN, 1930s, white gold, mechanical movement

LORD ELGIN, 1940s, white gold filled, mechanical movement

LORD ELGIN, 1940s, yellow gold filled, mechanical movement

LORD ELGIN, 1930s, yellow gold, mechanical movement

LORD ELGIN CHEVRON, 1950s, yellow gold filled, mechanical movement

ELGIN, 1920s, yellow gold filled, mechanical movement

ELGIN DELUXE, 1938, yellow gold filled, mechanical movement

Eterna

Eterna has been making high quality watches for 150 years. For a small company, it has achieved a number of successes, including producing novelties such as the first alarm wristwatch (in 1914), the first cigarette-lighter watch (in 1926), and an eight-day alarm watch (in the early 1930s).

Perhaps the company's biggest year was 1948, when it developed the ball bearing–mounted rotor for self-winding movements. The five balls involved soon became the company's trademark symbol, and today all Eterna watches feature a dial with five small circles under the twelve-hour marker. However, the brand's primary contribution to the watch world was its movement company, spun off from Eterna in the 1930s and eventually developed into the company known today as ETA, the largest and best-known of all Swiss movement manufacturers, now a part of the Swatch Group.

Since the early 1980s, Eterna was bought and sold a number of times, and eventually ending up in the hands of Porsche Design (which had formerly contracted with IWC to produce its watches) in the late 1990s. During the 2000s, Eterna again began producing watches under its own name and developing new movements.

Porsche Design eventually sold Eterna to a Chinese watch and jewelry group in 2012, which has since made a large investment in resurrecting the brand. In particular, Eterna has been designing and manufacturing ébauche movements again, as it did in the days before ETA spun off. Today it is considered a quality supplier of both time-only and chronograph movements, furnishing the calibers for many of the smaller, home-grown brands that have popped up over the last five years.

Eterna's most famous model is the Eternamatic Kon Tiki. This sport watch was used by Norwegian explorer and anthropologist Thor Heyerdahl and his crew when they crossed the Pacific Ocean in a small wooden raft to prove that Peruvians could have sailed to Polynesia many centuries earlier. Heyerdahl's crew, raft, and the watches all made it safely forty-three hundred miles across the Pacific in ninety-seven days.

ETERNA, 1950s, stainless steel, mechanical movement with chronograph

ETERNA, 1990s, stainless steel, self-winding mechanical movement with chronograph and date

ETERNA KONTIKI FOUR HANDS, 2000s, stainless steel, self-winding mechanical movement with date

ETERNA, c. 1950s, stainless steel with rose gold numerals and hands, hand-wound mechanical movement

ETERNA KONTIKI REFERENCE 130T, c. 1960s, stainless steel, self-winding mechanical movement with date

F.P. Journe

Only in its second decade, the brand is named for its founder and master, François-Paul Journe (b. 1957), widely considered one of the geniuses of the modern watch world. Journe constructed a pocket watch with a tourbillon when he was only twenty years old, developed highly technical movements for other luxury watch brands, and has created some of the most iconoclastic watches of the last half century.

The company, which produces fewer than 1,000 watches per year, has an extremely devoted cult following due to its unusual off-center dials as well as its array of interesting complications, including independently resonating balance wheels and a tourbillon with *remontoire*, both never before seen in a wristwatch.

F.P. Journe is one of the rare watchmakers that produces nearly everything — including cases and dials — itself from start to finish, and, with a few special exceptions, all of Journe's watches are either platinum or pink gold (the much-loved entry point into the brand, the Chronomètre Bleu pairs its namesake glossy blue dial with a case made of tantalum, a dark, heavy metal seldom used in watchmaking).

In 2013, F.P. Journe celebrated the thirtieth anniversary of the completion of his first pocket watch by making a wristwatch modeled after that early piece. The combination sterling silver and pink gold watch continued a tourbillon movement styled after eighteenth-century French pocket watch movements, looking like nothing else ever fitted into a wristwatch.

All of the company's watches display the motto *Invenit et Fecit*, Latin for "invented and made." They also perform extremely well at auction, despite the overall downturn in secondary market prices of modern watches since the 2007 financial crisis. In 2016, F.P. Journe launched what it calls *Patrimonie*, the very first certified pre-owned sales program from a Swiss watchmaker, showing the brand's strong belief in the long-term value of its pieces.

F. P. JOURNE OCTA RÉSERVE DE MARCHE, 2001, platinum, self-winding mechanical movement with date and power reserve

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Francois-Paul Journe makes forward-thinking yet historically informed choices in his creative complications, many of which are unique in the watch world. The Chronométre à Résonance has two complete movements whose balances beat in sympathy to each other, improving the overall timekeeping. The Tour-billon Souverain has a remontoir, a complicated device that regulates the power flow to the escapement.

F.P. JOURNE TOURBILLON SOUVERAIN, c. 2008, platinum, hand-wound mechanical movement with tourbillon, constant force remontoire, dead beat seconds, and power reserve

F.P. JOURNE CENTI-GRAPHE SOUVERAIN BLACK LABEL, c. 2013, platinum, hand-wound mechanical movement with chronograph measuring down to 1/100th of a second and rocker activation mechanism

F. P. JOURNE CHRONOMÈTRE À RÉSONANCE, 2001, platinum, two mechanical movements with power-reserve indicator

F.P. JOURNE CHRONOMÈTRE BLEU, 2010, tantalum, hand-wound mechanical movement

F.P. JOURNE HISTORICAL ANNIVERSARY TOURBILLON T30, rose gold and silver, hand-wound mechanical movement with tourbillon. The movement of this watch is modeled after that of F.P. Journe's first ever pocket watch.

F.P. JOURNE CHRONO-GRAPHE VAGABONDAGE III, 2017, platinum, hand-wound mechanical movement with digital jumping hours and seconds, remontoire d'égalité, and power reserve

F.P. JOURNE CHRONO-GRAPHE MONOPOUSSOIR RATTRAPANTE (BACK), 2018, platinum, hand-wound mechanical movement with monopusher split-seconds chronograph and big date

Girard-Perregaux

Although the company is more than two hundred years old, Girard-Perregaux is named for the man who bought it in 1852, Constant Girard (1825–1903). (Shortly thereafter, Girard married the daughter of a local watchmaker and added his wife's surname, Perregaux, to the name of the company.)

Girard-Perregaux has won many awards for its design and movements, but one of its greatest contributions to the history of the wristwatch occurred in 1879, when the German Navy commissioned watches attached to leather straps so they could be tied on the wrist — possibly the first mass production of watches specifically for men's wrists.

In the mid-1800s, Girard-Perregaux devoted itself to chronometry and especially tourbillons, and in 1884, created one of the great iconic designs: the tourbillon under Three Gold Bridges. It was so successful as a timekeeper at observatory competitions — not to mention so artistically rendered — that at a 1901 exhibition in Paris it was ruled ineligible to compete on the grounds that it could not be equaled. Today, the Three Gold Bridges appear in various guises across Girard-Perregaux's collection, sometimes set with gems and enamel, other times rendered in carbon composite instead of gold.

In the mid-twentieth century, Girard-Perregaux worked on improving automatic wristwatch chronometers; in 1957, it launched the Gyromatic line, fitted with a revolutionary reversing system. In 1967 it earned fully 70 percent of the chronometer certificates awarded by Neuchâtel and became one of a handful of brands to ever sell observatory-tested chronometers to the public.

Unlike most Swiss brands, Girard-Perregaux jumped into the quartz watch field very early, pioneering the use of the universally accepted standard frequency for quartz crystal regulators: 32,768 hertz. Although it produced high-grade, high-accuracy quartz movements in-house, ultimately, like most companies, Girard-Perregaux could not compete with the less-expensive Japanese quartz watches.

By the early 1990s, the company was down on its luck and was sold to Italian entrepreneur Luigi Macaluso, who gambled on the mechanical comeback and won. Girard-Perregaux became a high-end manufacturer once again as part of Macaluso's SoWind Group, which also included the JeanRichard brand, the SoWind movement manufacturer, and EMG, a case, bracelet, and component manufacturer. In 2011, the entire SoWind Group was acquired by French luxury group Kering, which today still owns Girard-Perregaux.

Over the last few years there has been a push by watch-makers to develop new types of escapements and regulating organs. Again, Girard-Perregaux was at the front of the pack here, unveiling the Constant Escapement in early 2013. An unusually shaped silicon blade spring is used to provide more consistent impulses of energy to the balance, making this watch (produced in very limited quantities) much more accurate over the full duration of its power reserve than a traditional wristwatch.

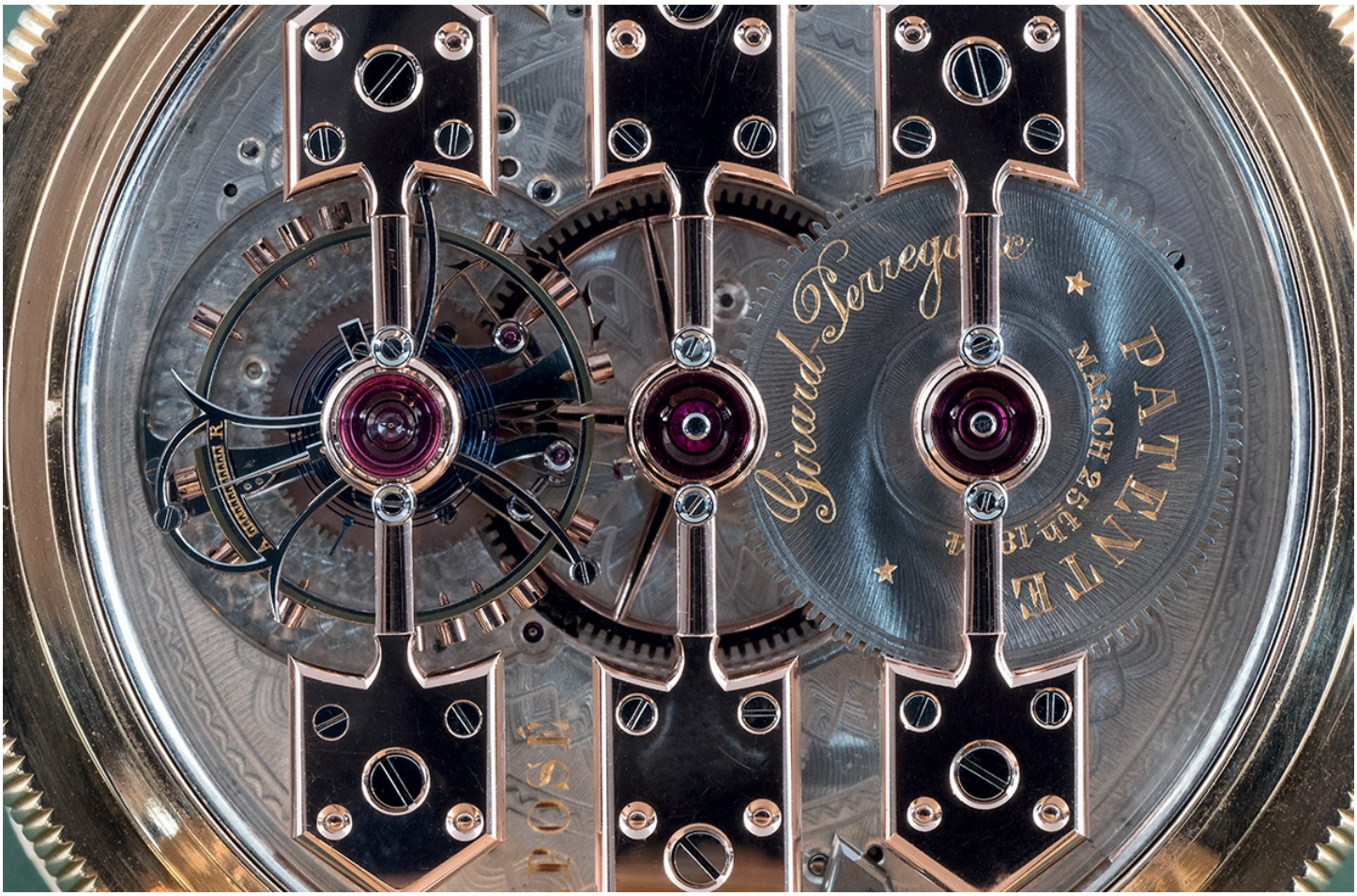
GIRARD-PERREGAUX 1966 WW.TC, 2017, rose gold, self-winding mechanical movement with world time display

GIRARD-PERREGAUX 1966 FULL CALENDAR, 2013, stainless steel, self-winding mechanical movement with day, date, month, and moonphase

GIRARD-PERREGAUX NEO-TOURBILLON, 2014, rose gold, hand-wound mechanical movement with tourbillon and titanium bridges

GIRARD-PERREGAUX OPERA ONE CARILLON WESTMINSTER (UNIQUE PIECE), 2000, platinum, mechanical movement with tourbillon and minute repeater on Westminster chimes

GIRARD-PERREGAUX TOURBILLON SOUS TROIS PONTS D'OR AUTOMATIQUE, 1990s, platinum, self-winding mechanical movement with tourbillon



GIRARD-PERREGAUX OBSERVATORY CHRONOMETER TOURBILLON POCKET WATCH (MOVEMENT), 1889, rose gold, hand-wound mechanical movement with tourbillon. In its day, this was one of the most accurate and most finely decorated watches ever made. The three gold bridges have since become a calling card of the brand.

GIRARD-PERREGAUX LAUREATO EVO3 TOURBILLON, 2009, titanium and platinum, hand-wound mechanical movement with tourbillon and sapphire bridges

GIRARD-PERREGAUX LAUREATO, 2017, stainless steel, self-winding mechanical movement, integrated stainless steel bracelet

GIRARD-PERREGAUX 1966 COLUMN-WHEEL CHRONOGRAPH, 2013, rose gold, hand-wound mechanical movement with chronograph and date

GIRARD-PERREGAUX SCUDERIA FERRARI CHRONOGRAPH RATTRAPANTE FOUDROYANTE, 2000, platinum, hand-wound mechanical movement with split-seconds chronograph and foudroyante complication

GIRARD-PERREGAUX CONSTANT ESCAPEMENT L.M., 2013, titanium, hand-wound mechanical movement with unique constant force escapement

Glashütte Original

Glashütte Original can claim a 150-year-old legacy, but its current success as a prestigious watch brand stems from its renaissance in the 1990s.

Glashütte is a village in Saxony where watchmaking giant Adolf Lange was born (see A. Lange & Söhne). For many years, the company Lange established was Germany's most important and successful watchmaker, but when Saxony ended up behind the Iron Curtain, several German watch companies, including Glashütte, were consolidated into one large watchmaker that produced standard-grade watches for a low-end Soviet market.

After the fall of the Iron Curtain, the company, then known as GUB (Glashütte Uhrenbetrieben GmbH), tried to raise its fortunes and started manufacturing high-end timepieces. From these beginnings rose the new Glashütte Original, a German watch brand with its own in-house movements and well-designed dials and cases.

Success came quickly, and the company's line of large, heavy, and sometimes complicated watches flourished. In 2000, the Swatch Group bought the brand, but allowed it to retain its German style.

A look at the company's product line reveals many similarities to present-day A. Lange & Söhne models; both brands also compete for the title of rightful heir to the great watchmaker Adolf Lange (Glashütte Original possesses most of Adolf Lange's archives, while Lange retains the name). For the most part, Glashütte Original watches are less expensive than those of Lange, are more industrially made, and feature less ornate hand-finishing.

The asymmetrical PanoMatic and its various iterations — some with moonphase indicators and others with chronograph complications — are the company's best-known watches, though in recent years its precision-oriented Senator watches have earned recognition for their straightforward designs and extremely reliable movements. Additionally, the brand's Senator Sixties and Senator Seventies watches are throwback designs inspired by those produced during the GUB era, with quirky mid-century typography and unusual colors.

Glashütte Original is also the proprietor of the German Watchmaking Museum and a German watchmaking school, both located down the street from the company's main manufacturer in Glashütte. It also has one of the more developed tooling workshops amongst contemporary watch brands, developing in-house many of the tools and machines then used to manufacture its watches.

Union, Glashütte Original's sister brand, also manufactures quality watches with movements that the company produces. These solidly constructed watches, priced far lower than Glashütte Original's, are not retailed in the United States, but are widely available elsewhere.

GLASHÜTTE ORIGINAL PANOMATICINVERSE, 2014, rose gold, hand-wound mechanical movement with big date

GLASHÜTTE ORIGINAL GRANDE COSMOPOLITE TOURBILLON, 2012, platinum, hand-wound mechanical movement with tourbillon, perpetual calendar, and travel time function

GLASHÜTTE ORIGINAL SENATOR CHRONOGRAPH PANORAMA DATE, 2017, stainless steel, self-winding movement with chronograph and big date

GLASHÜTTE ORIGINAL SIXTIES ICONIC SQUARE, 2017, stainless steel, self-winding movement with chronograph

GLASHÜTTE ORIGINAL SENATOR CHRONOMETER REGULATOR, 2013, stainless steel, hand-wound mechanical movement with regulator display, date, and power reserve

GLASHÜTTE ORIGINAL SIXTIES ICONIC, 2015, stainless steel, self-winding mechanical movement

GLASHÜTTE ORIGINAL SENATOR EXCELLENCE, 2016, stainless steel, self-winding mechanical movement that exceeds COSC chronometer standards

The distinguishing features of Glashütte Original's pano-movements are the three-quarter-plate bridge work, typical of Saxon watchmaking, the engraved balance cocks screwed in gold chatons, and the traditional technical refinements.

GLASHÜTTE ORIGINAL PANOMATICLUNAR, 2000s, platinum, self-winding mechanical movement with date and moonphase

Greubel Forsey

After both spending time at movement research and development workshop Renaud & Papi (before it was acquired by Audemars Piguet), Robert Greubel and Stephen Forsey decided to partner up and found their own development firm, CompliTime, in 2001. Doing everything from conceptualizing new complications to manufacturing actual watches, CompliTime works behind the scenes with clients ranging from Richard Mille to Harry Winston.

Just a few years after going out on their own, in 2004, the two presented the very first watch under the Greubel Forsey name, the Double Tourbillon 30° — the namesake complication here actually nested one tourbillon inside another, with the interior tilted at a thirty-degree angle so that the balance essentially rotated in a sort of gyroscope-like system. Since then, the vast majority of Greubel Forsey watches have included tourbillons — the brand's signature — many of them nested and many of them at various angles intended to provide even better chronometric performance.

In addition to Greubel Forsey's watches being very mechanically complicated — veering toward horological thought experiments about precision timekeeping — they also exhibit an extremely high-quality and ornate style of hand-finishing. Grained plates and bridges, deep bevels, and mirror polishing are all evident in Greubel Forsey's creations, which are some of the most finely decorated watches ever made. The style of finishing and overall aesthetic of Greubel Forsey's watches are thoroughly modern and display a twenty-first-century perspective on watchmaking, with a focus on contrast and asymmetry.

Teaming up with independent watchmaker Philippe Dufour, the company launched a project called Le Garde Temps Naissance d'une Montre in 2012, in which they commissioned fellow watchmaker and watchmaking teacher Michel Boulanger to create a limited series of completely handmade watches under Dufour's tutelage in order to show off and preserve traditional techniques for future generations.

Since 2006, Richemont has held a 20 percent stake in Greubel Forsey, though the company remains independently operated.

GREUBEL FORSEY DOUBLE TOURBILLON 30° TECHNIQUE, 2009, rose gold, hand-wound mechanical movement with inclined double tourbillon and power reserve

GREUBEL FORSEY GMT, 2013, platinum, hand-wound mechanical movement with inclined tourbillon, second time zone, power reserve, rotating globe, world time function, and traditional world time function on reverse

GREUBEL FORSEY TOURBILLON 24 SECONDS VISION, 2015, white gold, hand-wound mechanical movement with inclined tourbillon and power reserve

GREUBEL FORSEY GRANDE SONNERIE, 2017, titanium, self-winding mechanical movement with inclined tourbillon, grande sonnerie, petit sonnerie, minute repeater, power reserve, and patented safety features for movement protection

GREUBEL FORSEY QUANTIÈME PERPÉTUEL À ÉQUATION, 2015, platinum, hand-wound mechanical movement with inclined tourbillon, perpetual calendar, 24-hour display, equation of time, and power reserve

GREUBEL FORSEY QUADRUPLE TOURBILLON DIFFERENTIEL, c. 2011, platinum, hand-wound mechanical movement with four tourbillons, differential gear train, and power reserve.

GREUBEL FORSEY INVENTION PIECE 1, 2009, platinum, hand-wound mechanical movement with inclined double tourbillon and power reserve

GREUBEL FORSEY DOUBLE TOURBILLON ASYMÉTRIQUE, 2014, rose gold, hand-wound mechanical movement with inclined double tourbillon and power reserve

Gruen

The American brand Gruen was founded by German-born watchmaker Dietrich Grün (1847–1911), who, for lack of an umlaut in the new world, changed his name to something Americans could more easily spell: Gruen.

The watchmaker set up his organization in Columbus, Ohio, but imported all of his movements from his native Germany and then from Switzerland. Gruen began making wristwatches in 1908; after Dietrich died three years later, his son Frederick became the company's president. Soon Gruen was making solid, dependable watches that helped the company to become the country's largest watchmaker.

After Frederick's death, the family sold the firm, which nonetheless continued to make more than a half million watches every year.

In the late 1950s, Gruen moved to New York City (and all its records in Ohio were destroyed). Two decades later, Gruen bet heavily on LCD watches, reducing its production of mechanical ones and ignoring quartz. The gamble did not pay off, and although the LCF Telestar model sold well for a short time, the company eventually went bankrupt.

Today, modern watches bearing the Gruen name on the market are actually Chinese-made, with Japanese quartz movements. However, large numbers of vintage Gruens are available, with the gold doctor's watches and Curvex models being the most highly sought after, and, as with Elgins, many of these can be had for good prices. (These watches often used movements bought from the Swiss supplier Aegler, which also supplied Rolex, meaning that many vintage Rolex Princes on the market today are actually re-cased Gruens. Be wary.)

GRUEN, 1930s, yellow gold, mechanical movement

GRUEN CURVEX, 1930s, stainless steel, mechanical movement

GRUEN, 1930s, yellow gold filled, mechanical movement

GRUEN, 1930s, Guildite, mechanical movement

GRUEN, 1940s, white gold filled, mechanical movement

GRUEN PAN AMERICAN, 1943, yellow gold filled, mechanical movement

GRUEN PAN AMERICAN ACE, 1940s, yellow gold filled, mechanical movement

GRUEN DAY/NIGHT, 1950s, yellow gold filled, mechanical movement with day/night indicator

GRUEN CHRONO TIMER, 1940s, stainless steel, mechanical movement with chronograph

Hamilton

Hamilton was at one time the American Patek Philippe, the best and most authentic of the watchmaking companies in the United States. It made high-grade movements in an American style of finish (less fussy than the Swiss, but functionally uncompromised).

The company, founded in 1892 in Lancaster, Pennsylvania, quickly garnered acclaim selling highly accurate time-pieces to the railroad industry. It also produced some excellent marine chronometers during World War I, and it became the official watch of American airmail companies as well as many early airlines.

Throughout the 1920s and 1930s, Hamilton created many beautiful art deco watches too, including the Piping Rock and Spur models. (In 2014, a Piping Rock given to Lou Gehrig when he won the 1928 World Series fetched over $340,000 at auction.) And in the 1940s, Hamilton once again supplied the military (this time the United State Army) with watches.

In the 1950s, Hamilton lit up the watch world with its Venturas and Pacers, electric models created by famed designer Richard Arbib. Rather than conventional squares or circles, the watches' irregular cases resembled large triangles, highlighted with futuristic-looking numerals and hands, as though designed for the old television cartoon show *The Jetsons*.

Other electric models followed, such as the Altair (1962) and the Gemini (1963). Then, to stem the coming tide of quartz watches, as well as the highly successful Bulova Accutron, the company devised its Pulsar model, a transistorized watch with an LED display that became very popular for a time.

However, the Hamilton empire began to crumble in the late 1970s, when other more accurate and less expensive watches stole Pulsar's market share. The company fractured into several parts, and eventually the electronic watch division was sold to the Japanese company Seiko.

Meanwhile, another part of Hamilton entered into a business arrangement with the Buren Watch Company in Switzerland; soon many of Hamilton's movements came from Buren, including its popular micro-rotor Thin-O-Matic; other movements were supplied by ETA. The company became progressively European, and was soon bought by the Swiss company SSIH (see Swatch).

Today, the Hamilton brand is a solid entry-level label for the Swatch Group, with reliable chronographs and field watches, but it is a far cry from its former glory. (And its former plant in Lancaster, topped by two beautiful clock towers, is now a residential condominium.) In recent years, the brand has begun issuing reinterpreted editions of watches from its heyday, including the Intra-Matic, the Pan Europ, and even the asymmetrical Ventura. This comes alongside renewed interest from collectors in genuine vintage Hamilton watches, many of which present excellent value, as prices have not yet skyrocketed and it is often possible to obtain an outstanding watch for a reasonable sum of money.

HAMILTON SQUARE ENAMEL, 1926–27, white gold with enamel inlay, mechanical movement

HAMILTON LANGLEY, 1929–33, white gold, mechanical movement

HAMILTON OVAL, 1928, white filled gold with enamel inlay, mechanical movement

HAMILTON CORONADO, 1929–32, white gold with enamel inlay, mechanical movement

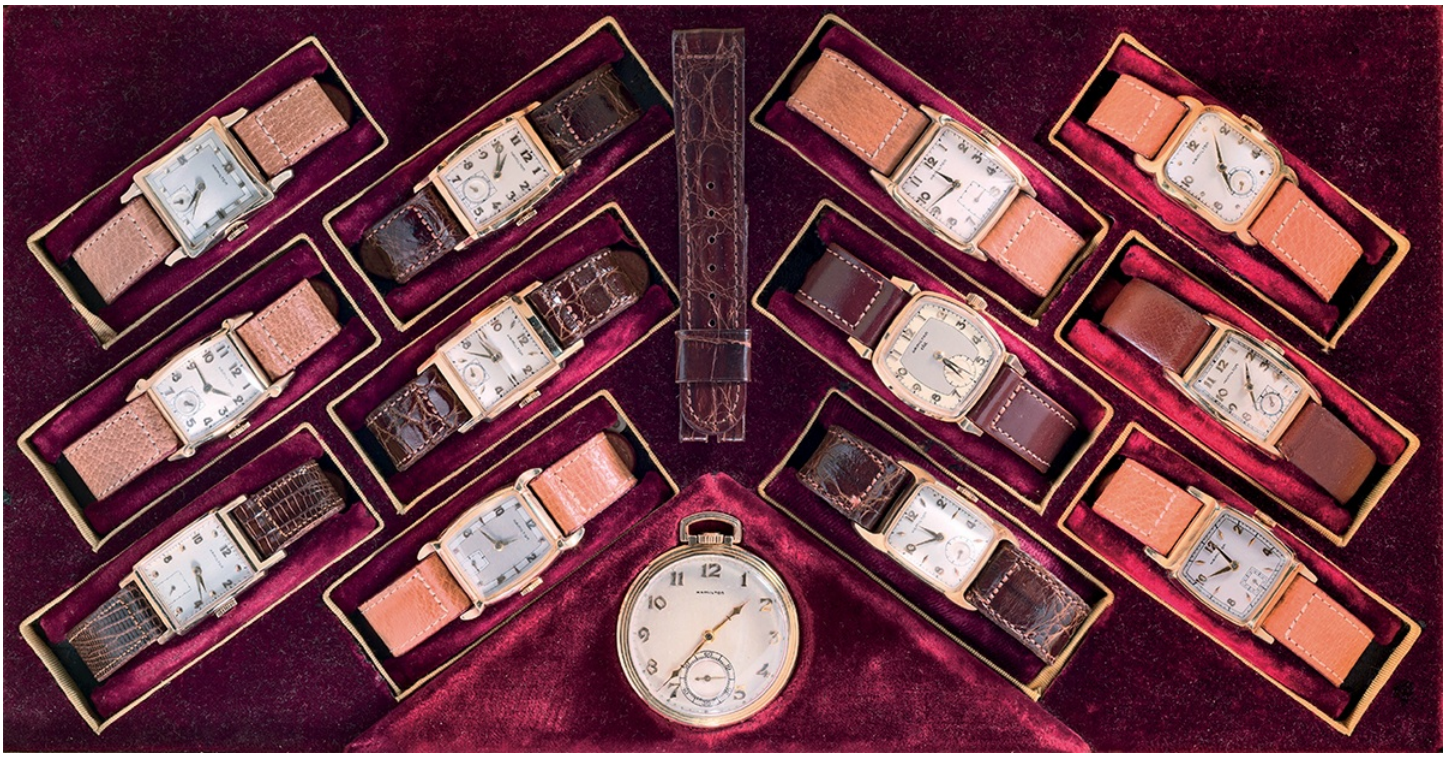
HAMILTON PIPING ROCK, 1928–32, yellow gold with enamel inlay, mechanical movement

HAMILTON SECKRON, 1935, yellow gold filled, mechanical movement

HAMILTON MOUNT VERNON, 1932–34, white gold filled, mechanical movement

HAMILTON ANDREWS, 1931–34, white gold, mechanical movement

HAMILTON OAKMONT, 1931–34, white gold, mechanical movement



HAMILTONS, 1953

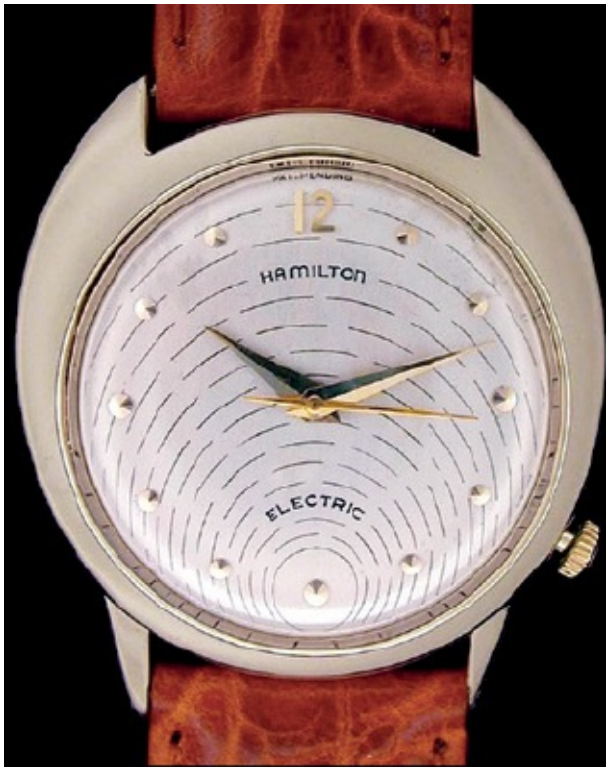
TOP ROW: **RYAN, LINDSAY, CRAIG, GROVER**

MIDDLE ROW: **CRANSTON, BRENT, BELDON, SHERWOOD**

BOTTOM ROW: **EMERY, MEDFORD, CARLTON, ALAN**

All mechanical movements

HAMILTON VENTURA, c. 1957, yellow gold, electric movement



HAMILTON SPECTRA, c. 1957, yellow gold, electric movement

HAMILTON EVEREST, c. 1958, yellow gold filled, electric movement

HAMILTON METEOR, c. 1960, yellow gold filled, electric movement

HAMILTON FLIGHT II, 1960, yellow gold filled, mechanical movement

HAMILTON POLARIS, 1960s, yellow gold, electric movement

Richard Arbib, who designed the cases and dials of the Hamilton electrics, claimed that the shape of the Ventura was inspired by fins he had designed for World War II bombs and then for 1950s automobiles.

HAMILTON INTRA-MATIC, stainless steel, self-winding mechanical movement with date

HAMILTON KHAKI FIELD AUTO 38MM, stainless steel, self-winding mechanical movement with date

HAMILTON PAN EUROP AUTO, 2014, stainless steel, self-winding mechanical movement with day and date

The surge in popularity of vintage-inspired watches has been a boon for Hamilton, which has no shortage of mid-century racing chronographs, dress watches, and field watches from which to draw inspiration.

Hermès

The famed Parisian luxury house has a longer history with watches than you might expect — in fact, few companies have made a stronger commitment to producing top quality watches over the last decade than Hermès.

Hermès has been selling watches at its flagship store on Rue du Faubourg Saint-Honoré since 1928, but they were not Hermès watches *per se*. The company added its name to the dials of watches produced in partnership with makers such as Universal Genève. These are now highly sought after in the vintage market — but beware, many are fakes with the stamped logo having been added later to increase the value of an otherwise unremarkable watch.

In 1958, Hermès set up shop in Switzerland and began making its own watches. These include the Arceau, with its scrolling numerals that twirl across the outer edge of the dial, and the Cape Cod, with its square dial and the now iconic *double tour* strap, which wraps twice around the wrist.

These watches, with their quartz movements, are generally less interesting to watch enthusiasts, and in in 2003 Hermès began working with Manufacture Vaucher to develop its own mechanical movements. Three years later, Hermès purchased a financial stake in the movement maker and completely acquired its own dial manufacturer and case maker too, fully committing to making high-end mechanical watches in a modern, fully integrated way.

Since then, the *maison* has collaborated with top watch-makers on unusual complications that are more about conceptual experiments like suspending time than pure functionality — such as a modern classic in the Slim d'Hermès collection of dress watches, which includes a typeface designed just for these watches, ultra-slim, in-house movements, and more practical complications such as a perpetual calendar.

HERMÈS ARCEAU CHRONO TITANE, 2017, titanium, self-winding mechanical movement with chronograph and date

HERMÈS ARCEAU LE TEMPS SUSPENDU, 2013, stainless steel, self-winding mechanical movement with proprietary "suspended time" complication and 24-hour indicator

HERMÈS "ERMETO" 8-DAY ALARM TRAVEL CLOCK, c. 1930s, stainless steel and glossy crocodile leather, hand-wound mechanical movement with alarm function, produced by Movado

HERMÈS SLIM D'HERMÈS QUANTIÈME PERPÉTUEL, 2017, platinum, self-winding mechanical movement with perpetual calendar, second time zone, and moonphase

HERMÈS CAPE COD, 2017, stainless steel, quartz movement with date, “double tour” strap

HERMÈS SLIM D'HERMÈS, 2016, rose gold, self-winding mechanical movement

In 2015 Hermès revealed a partnership with technology company Apple, producing special editions of the Apple Watch that come equipped with Hermès leather watch straps in styles such as wide cuffs and the *double tour*, as well as digital watch faces inspired by Hermès designs that are exclusive to these models.

Hublot

The Swiss firm Hublot, founded in 1980, started with a single-minded approach to watch design: *Hublot* is French for porthole, which is, more or less, what most of the company's watches resemble. Hublot's watches were designed to be simple and clean, with no unnecessary elements; on the original models, twelve titanium screws secured the bezel to the case so that the screws, rather than digits, could be used to mark the hours. They were placed on high quality, vanilla-scented rubber straps, which were mocked at first but have since been emulated by many others.

Hublot was acquired by LVMH in 2008, and six years later CEO Jean-Claude Biver was made head of watchmaking for all of LVMH (which also includes TAG Heuer and Zenith). Biver, a savvy marketer and product developer, helped Hublot become one of the most highly visible watch brands in popular culture through partnerships with musicians such as Jay Z and Swizz Beatz, sports teams such as Chelsea FC and the Dallas Cowboys, and Italian automaker Ferrari.

While the brand's aggressive marketing strategy receives much attention, Hublot has heavily invested in technical development over the last decade. In addition to developing its own in-house movements to power bestsellers like the Big Bang chronograph, the brand has experimented with materials such as synthetic sapphire for watchcases and has created multiple proprietary alloys of gold to make the material more robust and scratch-resistant.

HUBLOT CLASSIC FUSION TOURBILLON CATHEDRAL MINUTE REPEATER, 2015, titanium, self-winding mechanical movement with tourbillon and cathedral gong minute repeater

HUBLOT BIG BANG UNICO PERPETUAL CALENDAR SAPPHIRE, 2017, sapphire and titanium, automatic mechanical movement with chronograph, perpetual calendar, and moonphase

HUBLOT CLASSIC FUSION AEROFUSION MOONPHASE BLACK MAGIC, 2015, ceramic, self-winding mechanical movement with day, date, month, and moonphase

HUBLOT CLASSIC FUSION, c. 2000, titanium and zirconium, self-winding mechanical movement with date

HUBLOT BIG BANG, 2009, rose gold, self-winding mechanical movement with chronograph and date

IWC

The International Watch Company (IWC) is the only major European watch company founded by an American. In 1868, twenty-seven-year-old Massachusetts resident Florentine Ariosto Jones (1841–1916) decided to build a watch factory in Switzerland so he could supply the United States with well-made but inexpensive movements. Jones joined up with watchmaker Johann Heinrich Moser (1805–1874), whose hometown of Schaffhausen was located in the German-speaking part of Switzerland; here a hydroelectric plant had recently been built, generating low-cost energy perfect for his scheme.

Despite the company's intelligent business strategy and well-manufactured watches, the grand plan crashed. Running into high tariffs and other difficulties when trying to enter the American market, Jones found limited success there. When his machinery began to fail, the company did too. By 1875, it was bankrupt. Another American, Frederick Seeland, took over, and IWC fared somewhat better — but only for a short time. A third owner then acquired it: Johann Rauschenbach-Vogel, an IWC executive whose family subsequently held on to IWC for four generations.

The company prospered through the early part of the twentieth century, and although the Depression caused another downturn, IWC stayed afloat, in part because it always strove for innovation; as early as 1899, the company had started using its own small, 64-caliber women's pocket watch movement for a series of men's wristwatches. During World War I, it began manufacturing its own 75-caliber men's wristwatch movement.

One of the company's best decisions came when it strove to meet the demands of its Portuguese agents, who were requesting an oversized watch. In response, the company produced the Portuguese, a large wristwatch with a pocket watch movement. The model, resurrected by the company in 1993, remains one of its most successful, now made as a basic time-only watch, a minute repeater with perpetual calendar, and chronograph, and every level of complication in between. The name of the line was officially changed to Portugieser in 2016.

In the late 1930s came the Mark IX, an anti-magnetic watch designed specifically for military pilots. This would eventually evolve into the legendary Mark XI, a favorite of the British Air Force during the middle of the twentieth century. The Mark series has continued to this day, resulting in the current Mark XVIII and a host of other pilot's watches inspired by the original, including the IWC Big Pilot, an oversized version of the classic that is one of IWC's best sellers.

IWC DRESS WATCH, c. 1960s, rose gold, hand-wound mechanical movement

IWC INGENIEUR REFERENCE 666A, 1963, stainless steel, self-winding mechanical movement with anti-magnetic protection

During the war, the Allies bombed the IWC factory in Schaffhausen, but the plant survived and continued making timepieces. In fact, after the war, despite losing its Eastern European market due to the Soviet occupation, IWC prospered by reestablishing its old connections in other countries, especially the United States.

In the late 1970s, the company was once again in financial trouble, but was rescued by VDO, a German industrial conglomerate. It then began a long-term (but now defunct) cooperation with designer F.A. Porsche of the automobile dynasty, resulting in now-iconic watches such as the Ocean 2000 dive watch.

In 1991, IWC director Günter Blümlein founded LMH; the company owned all of IWC as well as 90 percent of A. Lange & Söhne and 60 percent of Jaeger-LeCoultre (Aude-mars Piguet owned the other 40 percent). Richemont eventually bought LMH in 2000.

While IWC spent the last few decades of the twentieth century using mostly outsourced movements modified to suit its watches, the true *manufacture* began making more and more of its movements in-house in the early 2000s, designing hard-wearing calibers with long power reserves specifically for its collections, allowing it to once again become vertically integrated as it had traditionally been.

Additionally, IWC is currently completing construction of a new *manufacture* building in Schaffhausen that will be one of the most environmentally friendly watch factories in the world, complete with solar power, LED lighting, a green roof, and groundwater usage.

IWC DA VINCI JUBILEE RATTRAPANTE, 1995, platinum, self-winding mechanical movement with split-seconds chronograph, perpetual calendar, and moonphase

IWC PORTOFINO PERPETUEL, 1990s, platinum, mechanical movement with perpetual calendar and moonphase

IWC PORTOFINO, 1980s, yellow gold, mechanical movement with moonphase

IWC NOVECENTO AUTOMATIC PERPETUAL, c. 2000, yellow gold, self-winding mechanical movement with perpetual calendar and moonphase

IWC is a technical engineering brand that has built its long-term success on a few easily identifiable lines, such as the Portuguese, the Da Vinci, the Portofino, the Ingenieur, and the company’s famous pilot’s watches.

IWC PILOT'S WATCH MARK XI, 1952, stainless steel, hand-wound mechanical movement, originally supplied to the British Royal Air Force

IWC PILOT'S WATCH MARK XVIII, 2016, stainless steel, self-winding mechanical movement with date and soft-iron cage

IWC PILOT'S WATCH MARK XVIII EDITION "TRIBUTE TO MARK XI," 2017, stainless steel, self-winding mechanical movement with date and soft-iron cage

IWC BIG PILOT'S WATCH HERITAGE, 2016, titanium, self-winding mechanical movement with date and seven-day power reserve

Highly complicated watches can be finicky, but IWC has a reputation for designing and manufacturing complications that work by using well-tested, tried-and-true movements as a base.

IWC PORTUGUESE ANNUAL CALENDAR, 2015, rose gold, self-winding mechanical movement with annual calendar and seven-day power reserve

IWC PORTUGIESER REFERENCE 5007, 2015, stainless steel, self-winding mechanical movement with date and seven-day power reserve

IWC PORTUGIESER CHRONOGRAPH, 2015, stainless steel, self-winding mechanical movement with chronograph

Though best known for its time-only, time-and-date, and chronograph watches, IWC actual makes a full complement of complications in-house at its Schaffhausen manufacture, including a venerated perpetual calendar designed by legendary watchmaker Kurt Klauss.

IWC PORTUGIESER PERPETUAL CALENDAR TOURBILLON EDITION "150 YEARS," 2018, self-winding mechanical movement with torubillon, perpetual calendar, and moonphase

IWC PORTUGIESER CONSTANT-FORCE TOURBILLON EDITION "150 YEARS," 2018, hand-wound mechanical movement with constant-force tourbillon, moonphase, and power reserve

IWC PALLWEBER EDITION "150 YEARS," 2018, rose gold, hand-wound mechanical movement with jumping digital display

Jaeger-LeCoultre

Mention the name Jaeger-LeCoultre (or, more familiarly, JLC) to people who like watches and they usually think of its trademark model, the Reverso. Mention the name to connoisseurs, and they will tell you that few companies can match Jaeger-LeCoultre's long history of well-manufactured watches. Not only has the company produced high-quality timepieces throughout its nearly 175-year history, but it has also made movements for such brands as Vacheron Constantin, Audemars Piguet, IWC, Breguet, and Patek Philippe.

The LeCoultre part of Jaeger-LeCoultre dates back to 1833, when Antoine LeCoultre (1803–1881) opened a watch factory in Le Sentier, Switzerland (not far from where the current factory stands). LeCoultre was a gifted watchmaker: In 1844, he invented the millionometer, the first instrument capable of measuring components to the nearest micron, or millionth of a meter; in 1847, he developed a crown winding system that set the time.

LeCoultre established a reputation for innovation and quality, and his company flourished, becoming the leading supplier of movements, parts, and tools to the Swiss watch-making industry. LeCoultre's company also produced complicated movements, repeaters, chronographs, calendars, and innovations such as the world's flattest pocket watch caliber, a 1.38-millimeter-high movement (in 1903).

In 1925, David LeCoultre, grandson of the firm's founder, merged his company with that of Edmond Jaeger (1850–1922), who supplied watch movements to Cartier; the company began selling watches under the name Jaeger-LeCoultre.

The company continued to innovate. In 1928, Jaeger-LeCoultre introduced the Atmos clock, which never needs winding; its power source is the change in air temperature. In 1929 came the world's smallest mechanical movement — the Calibre 101 — weighing less than a gram. And, in 1931, came the Reverso; according to legend, it was designed to help India-based British officers protect their watches while playing polo.

The Reverso was popular for some time, but fell out of vogue until the 1960s when an Italian dealer, visiting Jaeger-LeCoultre's factory, spotted unused cases sitting in a drawer. He bought them and fitted them with movements; they sold out instantly. Today there are Reverso models in different sizes and colors, at every level of complication, and the collection accounts for a significant portion of Jaeger-LeCoultre's total sales.

JAEGER-LECOULTRE MEMOVOX, 1950s, yellow gold, mechanical movement with alarm

JAEGER-LECOULTRE MEMOVOX GT, c. 1960s, stainless steel, self-winding mechanical movement with alarm and date

JAEGER-LECOULTRE MASTER MEMOVOX, 2016, stainless steel, self-winding mechanical movement with alarm and date

In 1932, LeCoultre attempted to buy a majority interest in Patek Philippe, but lost out to Charles and Jean Stern, whose company was already the supplier of the dials used in Patek Philippe watches.

Throughout the rest of the twentieth century, Jaeger-LeCoultre turned out excellent (and highly collectible) mid-priced watches, including a number of alarm watches such as the Memovox, the Deep Sea Alarm, and the Polaris, as well as the time-only Geophysic, produced for polar explorers in 1958. These are all extremely popular with vintage collectors today, and prices have surged over the last decade (though basic Memovox models are still quite affordable and a great entry point into the world of vintage watch collecting).

But, like IWC, the company ran into tough times during the 1970s; also like IWC, it was rescued by the German company VDO, and today it is owned by Richemont.

In addition to steadily producing consumer-friendly watches that generally present tremendous value relative to their prices, Jaeger-LeCoultre is a brand constantly investing in research and development to create new complications and refine existing ones. In particular, there is the Duométre collection, which employs a special system in which one escapement effectively regulates two separate movements within one watch, allowing the core timekeeping and complication mechanisms to function independently, and the Hybris Mechanica collection, which includes exceptional tourbillon watches such as the Gyrotourbillon and Sphérotourbillon.

Jaeger-LeCoultre is one of the few companies in Switzerland still producing its own movements, cases, dials, hands, and bracelets, almost across the board. Its enduring reputation for being the watchmakers' watchmaker is well deserved.

JAEGER-LECOULTRE TRIPLE CALENDAR, c. 1945, stainless steel, hand-wound mechanical movement with month, day, and date

JAEGER-LECOULTRE DUOMÈTRE SPHÉROTOURBILLON MOON, 2015, platinum, hand-wound mechanical movement with two power trains, date, power reserve, 24-hour indicator, moonphase, and multi-axis tourbillon

JAEGER-LECOULTRE MASTER CONTROL DATE WITH SECTOR DIAL, 2017, stainless steel, self-winding mechanical movement with date

JAEGER-LECOULTRE ATMOS 568, 2016, Baccarat Crystal, hand-wound mechanical movement with month and moonphase, designed by Marc Newson. In addition to making pocket watches and wristwatches, Jaeger-LeCoultre has been making special Atmos clocks since the 1920s. These clocks use changes in ambient temperature for power, with a change of one degree powering the clock for two days.

JAEGER-LECOULTRE GEOPHYSIC, 1959, yellow gold, hand-wound mechanical movement with anti-magnetic protection

JAEGER-LECOULTRE GEOPHYSIC TRUE SECOND, 2015, stainless steel, self-winding mechanical movement with deadbeat seconds and date

In 1958, Jaeger-LeCoultre created a special watch for a polar submariner expedition called the Geophysic. It was meant to be a durable, ultra-precise timekeeper and it represented the best of what Jaeger-LeCoultre could do at the time. Over half a century later, the idea was revived in the Geophysic True Second, another high-precision watch, this time fitted with a deadbeat seconds mechanism.

JAEGER-LECOULTRE MASTER ULTRA THIN PERPETUAL CALENDAR, 2016, stainless steel, self-winding mechanical movement with perpetual calendar and moonphase

JAEGER-LECOULTRE MASTER CALENDAR WITH METEORITE DIAL, 2014, rose gold, self-winding mechanical movement with day, date, month, and moonphase. The dial is made of meteorite.

JAEGER-LECOULTRE POLARIS MEMOVOX LIMITED EDITION, 2018, stainless steel, self-winding mechanical movement with date and alarm

JAEGER-LECOULTRE MASTER ULTRA-THIN MINUTE REPEATER FLYING TOURBILLON, 2014, white gold, self-winding ultra-thin mechanical movement with tourbillon and minute repeater

JAEGER-LECOULTRE GRAND REVERSO ULTRA-THIN TRIBUTE TO 1931, 2013, stainless steel, hand-wound mechanical movement

JAEGER-LECOULTRE TRIBUTE REVERSO DUO, 2016, stainless steel, hand-wound mechanical movement with second time zone

JAEGER-LECOULTRE REVERSO TRIBUTE CALENDAR, 2016, rose gold, hand-wound mechanical movement with month, day, date, moonphase, second time zone, and day/night indicator

JAEGER-LECOULTRE REVERSO TRIBUTE GYROTOURBILLON, 2016, platinum, hand-wound mechanical movement with day/night indicator, second time zone, 24-hour display, and spherical tourbillon

The Reverso, a watch whose case flips over to reveal a protective back or another face, is a design landmark in horology. The Reverso was introduced in 1931, and while it has not been in continuous production, it has become an icon since its reintroduction in the early 1980s. JLC now makes watches with a vast array of complications, metals, designs, and dials.

JAEGER-LECOULTRE REVERSO, c. 1940, stainless steel, hand-wound mechanical movement

Jaquet Droz

This small brand, like many others, is named after a venerated Swiss watchmaker. In this case it is Pierre Jaquet-Droz (1721–1790), who was famous for his automatons — robot-like wind-up toys that performed human functions such as signing a name or pouring a cup of tea; others were in the shape of animals, including dogs that barked and birds that sang.

Droz was eventually accused of sorcery, although his unusual machines grew so popular that he never faced serious trouble. Eventually he was invited to present his works to Spain's King Ferdinand VI, who liked them so much that he bought every piece Droz brought with him.

The company disappeared many years ago, but was resurrected in 1995 by two former Breguet employees who bought the rights to the name and assembled and sold replicas of the original Droz automatons. They also began manufacturing mid-grade mechanical watches with modest success.

Since being purchased by the Swatch group in 2003, the company has redefined itself as a small-production, high-grade watch company that use updated and modified movements based on well-regarded calibers from Frédéric Piguet (part of Blancpain, also owned by Swatch Group).

The brand's signature model is the Grande Second, which uses two overlapping dials set into the main dial, the smaller showing the hours and minutes and the larger the seconds. These range in style from extremely modern versions with bright white enamel dials and minimal markings to more baroque variations featuring precious stones, colorful enamel work, and hand engraving.

Returning to its roots, Jaquet Droz also crafts miniaturized automata that are just as striking today as they would have been in the eighteenth century. The Chiming Bird features a miniature enameled bird that tweets and flaps its wings under a sapphire glass dome and the Lady 8 Flower contains a gold and gem flower that opens and closes on demand. These are made in extremely small limited editions, as are all of Jaquet Droz's more artistic watches.

JAQUET DROZ GRANDE SECONDE PAILLONNÉE, 2016, rose gold, self-winding mechanical movement

JAQUET DROZ GRANDE SECONDE MINUTE REPEATER, 2010, rose gold, self-winding mechanical movement with minute repeater

JAQUET DROZ ASTRALE GRANDE HEURE GMT, 2015, rose gold with black enamel dial, self-winding mechanical movement with two 24-hour displays

JAQUET DROZ GRANDE SECONDE MOON ONYX, 2017, stainless steel, self-winding mechanical movement with moonphase and date

JAQUET DROZ GRANDE SECONDE IVORY ENAMEL, 2002, rose gold, self-winding mechanical movement

JAQUET DROZ GRANDE SECONDE OFF-CENTERED AVENTURINE, 2017, stainless steel and diamonds, self-winding mechanical movement

JAQUET DROZ TROPICAL BIRD REPEATER, 2017, rose gold, hand-wound mechanical movement with minute repeater and peacock automaton

JAQUET DROZ LES DOUZE VILLES EMAIL, 2005, white gold, self-winding mechanical movement with world time

JAQUET DROZ LES LUNES EMAIL, 2005, white gold, self-winding mechanical movment with triple-date calendar and moonphase

Laurent Ferrier

Horologist Laurent Ferrier spent nearly forty years working at Patek Philippe in Geneva, where he eventually became technical director. (He was also a race car driver of note, finishing in third place at the 1979 24 Hours of Le Mans.) Then, in 2008, he set out on his own, founding his eponymous brand in downtown Geneva, not too far from his old colleagues, with a goal of creating a brand that could outlive him and that could create technically exceptional watches with a particular aesthetic.

The company offers a small range of watches, with the pinnacle being an advanced tourbillon that uses two hair-springs in the escapement. However, the core of the collection is various takes on a seemingly simple time-only watch, the Galet Micro-Rotor. This watch uses Laurent Ferrier's stone-shaped case (and sometimes the square variation thereof) and simple, highly legible dials that straddle minimalism and traditionalism. It shows just the hours, minutes, and seconds with Ferrier's unique spear-shaped hands.

What's most important with the Galet Micro-Rotor, though, is the movement inside. Laurent Ferrier's in-house caliber utilizes a natural escapement (as opposed to a typical Swiss lever escapement), which experiences less friction and is more reliable over time. Additionally, these movements are highly decorated, with deep bevels, contrasting finishes, and hand engraving throughout. This caliber is regarded by many collectors to be the finest automatic movement made today.

Very few watch brands, even small and independent ones, offer any sort of customization in their products. What they make is what customers must buy. Laurent Ferrier, on the other hand, will work directly with clients on custom dials and offerings that often involve complex enamel and metal work.

LAURENT FERRIER GALET ANNUAL CALENDAR MONTRE ÉCOLE, 2018, stainless steel, hand-wound mechanical movement with annual calendar

LAURENT FERRIER GALET CLASSIC TOURBILLON DOUBLE SPIRAL, 2010, red gold, hand-wound mechanical movement with twin-hair-spring tourbillon

LAURENT FERRIER GALET MICRO-ROTOR, 2012, white gold, self-winding mechanical movement with natural

LAURENT FERRIER GALET SQUARE BORÉAL, 2016, stainless steel, self-winding mechanical movement with micro-rotor and natural escapement

LAURENT FERRIER GALET MICRO-ROTOR MONTRE ÉCOLE, 2017, rose gold, self-winding mechanical movement with micro-rotor and natural escapement

Longines

In 1832, Auguste Agassiz (1809–1877) and a pair of business partners founded a small watch assembly workshop in Saint-Imier, in the northwest corner of Switzerland. At the time, the shop was known as Raiguel Jeune.

After a few decades of selling handmade pocket watches both domestically and abroad in the United States, then company director Ernest Francillon established a new workshop for serially producing movements in 1867. The new factory was situated on a plot of land known as *les longines* or "the long meadows," and the company soon after adopted the name for itself as well.

Longines watches have long been associated with aviation, largely due to the chronographs the company produced for military pilots during the first half of the twentieth century, as well as the special Weems Hour-Angle watch. The latter was developed with Philip van Horn Weems, who proposed the use of a bezel calibrated in angular degrees to calculate longitude in flight, and was used by pilot Charles Lindbergh on his early transatlantic flights.

While the manufacturer was producing all of its own movements by the 1880s, Longines' greatest technical accomplishment arrived in 1936 with the introduction of the caliber 13ZN chronograph movement — still regarded as one of the greatest chronograph movements of all time, on par with those from the likes of Lemania. Vintage examples are highly sought after, with the rarest ones fetching increasingly high prices at auction.

Amidst the quartz crisis in 1971, Longines was acquired by ASUAG, now the Swatch Group. Since then, the brand has had its movement manufacturing capabilities folded into ETA, the major supplier of *ébauche* movements, also controlled by the Swatch Group. While Longines is no longer making its own in-house movements, it does have a handful of proprietary movements developed in collaboration with ETA.

Today, Longines is best known for its accessibly priced mechanical watches, many of which are inspired by the classic chronographs and dive watches from the company's archive. Longines also holds the longest standing trademark for any watch brand for its winged hourglass logo, registered in Switzerland in 1889.

LONGINES DIVER REFERENCE 7150-1, 1960s, stainless steel, self-winding mechanical movement with inner rotating bezel and SuperCompressor case

LONGINES 30CH FLYBACK CHRONOGRAPH, 1950s, rose gold, hand-wound mechanical movement with flyback chronograph

LONGINES AVIATION BIGEYE, 2017, stainless steel, self-winding mechanical movement with chronograph

LONGINES REFERENCE 23075 "CHRONOSTOP," 1947, stainless steel, hand-wound mechanical movement with single-button flyback chronograph with central seconds and minutes hands

LONGINES HERITAGE 1945, 2017, stainless steel, self-winding mechanical movement

LONGINES LINDBERGH HOUR ANGLE, 1942, stainless steel, hand-wound mechanical movement and navigation bezel

LONGINES CONQUEST, 1950s, rose gold, self-winding mechanical movement

MB&F

Only a little more than one decade old, MB&F is one of several young, independent brands shaking up the traditionally conservative universe of mechanical watchmaking. However, founder Maximilian Büsser got his start in that more traditional world, first at Jaeger-LeCoultre and later at Harry Winston, where he founded the Opus program, which gave independent watchmakers the opportunity to design imaginative timepieces that wouldn't fit within typical collections.

After seven years, Büsser left Harry Winston and began working on MB&F, which is an abbreviation of "Max Büsser & Friends." The concept behind MB&F is that Büsser dreams up a concept and then works with the best designers, partners, and suppliers across the watch industry to bring his time-pieces to life. While an unusual approach in today's market, it is in some ways a throwback to the way watches were made in Switzerland before the invention of quartz, and long before vertically integrated, do-everything brands.

The first MB&F, the Horological Machine No. 1, debuted in 2007, and since then MB&F has added at least one new watch each year. These are often inspired by such objects as spaceships, race cars, and submarines, and in almost all cases they look nothing like traditional wristwatches. The best example of this might be the Horological Machine No.4, which is shaped like two jet engine turbines mounted to the wrist, with the watch dial and power-reserve indicator set into the ends.

In 2011, MB&F added the Legacy Machine collection to its portfolio, which contained watches designed on the premise of what an MB&F watch would look like had it been made in the nineteenth century instead of the twenty-first. The Legacy Machine No. 1 has since become one of MB&F's most iconic pieces, with the balance wheel itself suspended over the two enamel dials, all under the massive domed sapphire crystal.

While MB&F started out making just wristwatches, the brand has expanded into other like-minded products including high-end table clocks shaped like robots, a pen that resembles a rocket and lunar lander, and mechanical music boxes that play classic science fiction movie themes.

MB&F LEGACY MACHINE 1, 2011, rose gold, hand-wound movement with two time zones and vertical power reserve display

MB&F HOROLOGICAL MACHINE NO. 3 "STARCRUISER," 2010, titanium and white gold, self-winding mechanical movement with conical time displays, date, and day/night indicator.

MB&F LEGACY MACHINE SPLIT ESCAPEMENT, 2017, white gold, hand-wound mechanical movement split escapement, date, and power reserve

MB&F LEGACY MACHINE PERPETUAL, 2015, white gold, hand-wound mechanical movement with perpetual calendar and power reserve

MB&F HOROLOGICAL MACHINE NO. 8 "AQUAPOD," 2017, rose gold, self-winding mechanical movement with central flying tourbillon and concentric time displays

MB&F HOROLOGICAL MACHINE NO. 4, 2010, titanium, self-winding mechanical movement with split displays for power reserve and hours/minutes

MB&F HOROLOGICAL MACHINE NO. 5, 2012, zirconium and stainless steel, self-winding mechanical movement with three-disc time display projected by a sapphire crystal

MB&F HOROLOGICAL MACHINE NO. 1, 2007, black PVD white gold, self-winding mechanical movement with central tourbillon and split time display

Montblanc

Though best known for its fine pens, Montblanc has become an important player in the watch world in recent years.

Engineer August Eberstein and banker Alfred Nehemias founded the company in 1906 in Hamburg, Germany, and through the early part of the twentieth century they created iconic collections of writing instruments such as the Meisterstück, still Montblanc's best seller today.

In 1977 Montblanc was acquired by British luxury goods and menswear firm Dunhill when the latter expanded into other areas, such as leather goods, luggage, and fashion accessories, and more. Dunhill, and thus Montblanc, became a part of the Richemont Group upon its founding in 1988. Nearly a decade later, in 1997, the first Montblanc watches were created.

These first watches used simple stock movements and drew on the styling of Montblanc's pens for inspiration. However, from there Richemont has invested heavily in making Montblanc a legitimate *manufacture*, with watches that stand on their own (apart from the pens and other lifestyle goods) and in-house movements worthy of admiration from dedicated collectors.

The biggest step toward making this a reality came in 2006, when Richemont acquired the historic Minerva watch factory in Villeret, Switzerland, and made it a part of Mont-blanc. At Minerva, Montblanc is producing chronograph calibers at an extremely high level, developing complications such as the Montblanc ExoTourbillon, and even making its own hairsprings, while the simpler movements are made at the Manufacture Montblanc less than an hour away in Le Locle.

While it might be difficult for some traditionalists to accept Montblanc as a watch brand in its own right, the *maison* is producing high quality watches at competitive prices, often with styling targeted at younger, less conservative clients. Just as it did with pens in the early twentieth century, Mont-blanc is now creating watches worthy of serious attention.

MONTBLANC TIMEWALKER CHRONOGRAPH UTC, 2017, black DLC stainless steel, self-winding mechanical movement with chronograph, date, and GMT function

MONTBLANC 4810 ORBIS TERRARUM, 2016, stainless steel, self-winding mechanical movement with world time function

MONTBLANC HERITAGE CHRONOMÉTRIE CHRONOGRAPH ANNUAL CALENDAR, 2016, stainless steel, self-winding mechanical movement with chronograph, annual calendar, and moonphase

MONTBLANC 1858 GEOSPHERE, 2018, stainless steel, self-winding mechanical movement with dual-hemisphere world time function and date

MONTBLANC 1858 CHRONOGRAPH, 2018, bronze, self-winding mechanical movement with chronograph

MONTBLANC STAR LEGACY CHRONOGRAPH RIEUSSEC, 2018, stainless steel, self-winding mechanical movement with chronograph and date

MONTBLANC 1858 CHRONOGRAPH TACHY-METER LIMITED EDITION (BACK), 2017, back, bronze, hand-wound mechanical movement with chronograph. The Minerva Caliber M16.29 is a true top-tier monopusher chronograph movement, with outstanding mechanical pedigree and excellent finishing throughout.

MONTBLANC VILLERET 1858 VINTAGE PULSOGRAPHE, 2014, rose gold, hand-wound mechanical movement with monopusher chronograph, black enamel dial

MONTBLANC 1858 MONOPUSHER, 2018, stainless steel, hand-wound mechanical movement with monopusher chronograph

MONTBLANC EXOTOURBILLON RATTRAPANTE, 2013, white gold, hand-wound mechanical movement with four-minute tourbillon and monopusher split-seconds chronograph

Movado

This company was founded in 1881 by Achilles Ditesheim, but the name Movado didn't appear until 1905. Movado means "always in motion" in Esperanto, the language that was invented by late nineteenth-century idealists to replace all other languages but didn't catch on (today it has fewer than one hundred thousand speakers). As a result, "Movado" is probably Esperanto's best-known word.

The company produced many excellent watches throughout the last century, especially a series of triple-date watches marketed by Tiffany as well as Movado itself. The firm's Polyplan watch (1912) was the first designed to follow the wrist's curve; its 1926 Ermeto was a travel clock whose movement was activated by opening and shutting its case. Furthermore, Movado's chronograph movements were highly regarded by watchmakers and aficionados alike, and examples in good condition are fetching ever-higher prices with today's collectors.

Movado's most famous model, however, is the Museum watch, designed by Nathan George Horwitt in 1947. The straightforward blank face features a simple dot at the twelve o'clock position, along with an hour and a minute hand. The name refers to the fact that in 1960 the watch became the very first acquired by New York's Museum of Modern Art for its design collection. The watch is still being issued, with quartz movements and in nearly any conceivable combination of colors, metals, and sizes. Today there are even Movado smartwatches based on the classic Museum design.

Like so many others, the company foundered at mid-century and traded hands a number of times, first being acquired by the American Zenith Radio Corporation and then being sold to the North American Watch Company.

Today, the Movado Group is a conglomerate based in New Jersey; its brands include Ebel and Concord (once one of the largest Swiss importers to the United States, and best known for its ultra-flat quartz Delirium watches which used the thinnest movement ever made and were the predecessor to the original Swatch), as well as a number of licensed fashion brands.

MOVADO MUSEUM WATCH, stainless steel, hand-wound mechanical movement

MOVADO CONNECT, 2017, stainless steel, smartwatch powered by Android Wear

MOVADO EDGE, 2015, stainless steel, quartz movement, designed by Yves Béhar in collaboration with Movado

MOVADO CHRONOGRAPH CALIBER 95M, circa 1950s, stainless steel, hand-wound mechanical movement with chronograph

MOVADO SUPER SUB-SEA, 1960s, stainless steel, hand-wound mechanical movement with chronograph

MOVADO CALENDROGRAPH, 1950s, rose gold and stainless steel, hand-wound mechanical movement with month, day, and date

MOVADO CALENDERMETO, c. 1950, yellow gold, mechanical movement with triple-date calendar and moonphase

MOVADO TEMPOMATIC HS 288, 1970s, stainless steel, self-winding mechanical movement with date

Nomos Glashütte

This brand out of Glashütte, Germany, is known for its simple, clean design, and the quality workmanship displayed in each watch, both inside and out.

The original Nomos company, now almost completely unknown, went under many decades ago, but not for lack of sales; instead, its demise resulted from legal battles with other local firms that were unhappy with the company's policy of advertising its Glashütte roots and workmanship, while at the same time undercutting its competitors' prices.

Nomos was resuscitated in 1992 by the German Roland Schwertner, who still helms the company today; once again, the other Glashütte companies objected to Nomos using the name Glashütte on its dial, but this time the courts sided with Nomos, and the brand now features both the brand and place name on its watches.

Nomos is the Greek word connoting a custom or law, and comes from the verb *neimô*, meaning to distribute or dispense, and Nomos watches are distributed at a comparatively low price. Among its best models are the Bauhaus-inflected Tangente, the semi-sporty Ahoi, and the playful Metro, all of which can be worn with anything from a T-shirt to a tuxedo.

Nomos does not specify genders for any of its watches, and consequently they are popular with both men and women. It is one of the only watch brands that focuses primarily on timepieces with a sub-40mm diameter, with the bulk of the collection falling in the 35mm to 39mm range, and many of them being rather slim to boot.

While the brand relied on movements supplied by Swiss maker ETA for over a decade, everything changed in 2005 with the introduction of the in-house Alpha caliber. Since then, Nomos has only used in-house movements designed and manufactured in Germany (the company's design studio is in the hip Berlin neighborhood of Kreuzberg), with a total of 12 different calibers being made today.

Nomos took another big step forward in 2014 with the introduction of the Swing System, the company's own in-house escapement. Very few watch manufacturers — even those in the highest echelons — produce escapements themselves, as it is such a specialized, difficult craft. Rolled out slowly across Nomos's product offerings, most Nomos watches now contain the Swing System and are about as "in-house" as modern watches can be.

Beyond its technical prowess, Nomos is known for its excellent design approach. The watches are favorites amongst *Dwell*-reading, Apple-loving types, and have become a bit of a secret handshake among certain design professionals as well, especially in the company's native Germany, where nearly every creative professional seems to be wearing one.

NOMOS TANGENTE, early 2000s, stainless steel, hand-wound mechanical movement

NOMOS CLUB CAMPUS, 2017, stainless steel, hand-wound mechanical movement

NOMOS TANGENTE NEOMATIK 39 SILVERCUT, 2017, stainless steel, self-winding mechanical movement

NOMOS AHOI ATLANTIK, 2014, stainless steel, self-winding mechanical movement

NOMOS TANGENTE NEOMATIK, 2017, stainless steel, self-winding mechanical movement with in-house escapement

The Neomatik caliber is extremely slim for a self-winding movement and is made in-house all the way down to the escapement.

NOMOS ZÜRICH WELTZEIT, 2015, stainless steel, self-winding mechanical movement with date, second time zone, and in-house escapement

NOMOS METRO DATUM GANGRESERVE, 2014, stainless steel, hand-wound mechanical movement with date and power reserve

Officine Panerai

This Italian brand was founded in 1860 by Giovanni Panerai (1825–1897) as a small workshop for mechanical instruments. Within a decade, it was supplying the Italian navy with instruments ranging from fuses to depth-measuring devices.

The company retailed Rolex and Patek Philippe watches while continuing to make and sell optical and mechanical precision instruments to the Italian defense ministry. As business increased, it renamed itself Officine Panerai.

In 1935, it began making wrist-worn depth gauges and compasses; within a year it had produced the prototype for its well-known Radiomir wristwatch. In 1943, a safety lever and bridge device was fitted to the Radiomir, which pressed the crown tightly against the case and also permitted the watch to be wound under water.

Another of Panerai's technical innovations involved its dials, which are called "sandwich dials" because of their unique construction method. A base layer is covered with abundant luminous material, and then a dark black layer with the numerals and markings cut out is placed on top, allowing the luminous material to shine through in the dark. The result is a dial is that extremely legible in all conditions, which is perfect for a military watch.

For many years, the watches, which used mostly Rolex and Angelus movements, were available only to the Italian Navy, and the company eventually fell on hard times when those lucrative contracts began to disappear in the early 1970s. Only when the brand was resurrected in 1993 did it begin selling watches to the civilian market.

In 1997, Officine Panerai was purchased by Vendome Luxury Group, a wholly owned subsidiary of Richemont. It became a leader in the production of unusually large men's watches (many 45mm in diameter and larger), worn by movie stars and athletes, particularly Sylvester Stallone, who helped build the brand's popularity. The brand has developed an intense cult, and Panerai watch wearers — who call themselves *Paneristi* — often greet each other as though they were members of a club.

As trends moved away from oversized sport watches in the late 2000s, Panerai turned its focus to developing its own in-house movements in order to find new ways to appeal to collectors. It had already begun using its first in-house movements in 2005 in select models, but from 2007 to the present day, Panerai has steadily replaced the ebauche movements in its core Luminor and Radiomir models with in-house calibers, and has even developed its own complications such as split-seconds chronographs and tourbillons for use in limited edition pieces.

While the secondary market for modern Panerai watches has slowed in recent years from its peak in the mid-2000s, vintage Panerai watches still perform extremely well at auction, largely due to their scarcity and military history.

PANERAI, 1943, stainless steel, mechanical movement

PANERAI RADIOMIR 8 GIORNI BREVETTATO, made in 1956 for the Egyptian navy, aluminum, mechanical movement

PANERAI MARINA MILITARE, 1953, stainless steel, mechanical movement

PANERAI MARINA MILITARE, made in 1953 for the Italian navy, stainless steel, mechanical movement, designed for left-handed wearers

PANERAI LUMINOR DUE, 2017, titanium, self-winding mechanical movement

PANERAI LAB-ID LUMINOR 1950 CARBOTECH 3 DAYS, 2017, carbon composite, hand-wound mechanical movement with power reserve and no lubricants or oils.

PANERAI RADIOMIR 1940 3 DAYS PAM 662, 2016, stainless steel, hand-wound mechanical movement

PANERAI LO SCIENZIATO LUMINOR 1950 TOURBILLON GMT CERAMICA, 2013, ceramic, hand-wound mechanical movement with perpendicular tourbillon, second time zone, day/night indicator, and power reserve.

PANERAI RADIOMIR TITANIUM WITH CALIFORNIA DIAL, c. 2009, titanium, hand-wound mechanical movement

PANERAI LUMINOR REFERENCE 5218-201, 1993, stainless steel, hand-wound mechanical movement

PANERAI RADIOMIR GMT, 2003, stainless steel, self-winding mechanical movement with date, two time zones, and alarm

PANERAI LUMINOR AUTOMATIC CHRONO, 1999, white gold, self-winding mechanical movement with chronograph

PANERAI MARE NOSTRUM, 1993, stainless steel, hand-wound mechanical movement with chronograph

PANERAI LUMINOR TANTALIUM, 2003, tantalium, mechanical movement

PANERAI LUMINOR MARINA, 2002, yellow gold, self-winding mechanical movement with date

PANERAI LUMINOR 1950 BRONZO, 2011, bronze, self-winding mechanical movement with date

PANERAI LUMINOR 1950 PCYC 3 DAYS CHRONO FLYBACK AUTOMATIC ACCIAIO, 2017, stainless steel, self-winding mechanical movement with chronograph and central minutes counter

Ochs Und Junior

Dr. Ludwig Oechslin is best known for his restoration work on the Vatican's Farnese Astronomical Clock and his technical innovations at Ulysse Nardin. But in 2006, Oechslin teamed up with Beat Weinmann (who had sixteen years experience running Embassy, a major European watch retailer) to create Ochs und Junior.

The core goal at Ochs und Junior is achieving functionalism through simplicity. This comes through both aesthetically and technically. The watches feature almost no numerals, with most indicators using carefully arranged dots instead. Even the annual calendar, which shows the day of the week, date, and month, has no letters or numbers on the dial.

Likewise, the movements all push against the industry trend of boasting about complexity—instead, Oechslin designs complications that can be fitted to a standard ETA movement serviceable by any watchmaker and with as few components as possible. For example, the moonphase uses just five additional gears to show the phase of the moon accurate to one day in every 3,478.27 years, and the perpetual calendar utilizes just nine additional parts and can be set both forward and backward with no risk of damaging the mechanism.

Each watch is created to order for the customer too, so the level of customization available is unrivaled. The color and material of every hand, dial component, and dot can be specified, meaning styles can range from extremely clean and minimal to rather loud and brash. Luckily Ochs und Junior has a configuration tool on their website allowing customers to experiment all they like before a single piece of metal is shaped.

The brand creates fewer than two hundred watches per year and every one is sold directly to the end client by one of the core partners.

OCHS UND JUNIOR ANNUAL CALENDAR LIGHT, 2016, titanium, self-winding mechanical movement with annual calendar and all components constructed to minimize weight

OCHS UND JUNIOR MOON PHASE PATINA, 2013, sterling silver, self-winding mechanical movement with date and moonphase accurate to one day in 3,478.27 years

OCHS UND JUNIOR PERPETUAL CALENDAR, 2017, titanium, self-winding mechanical movement with perpetual calendar

OCHS UND JUNIOR MOON PHASE, 2017, titanium, self-winding mechanical movement with date and moonphase accurate to one day in 3,478.27 years

OCHS UND JUNIOR DATE, 2017, titanium, self-winding mechanical movement with date

OCHS UND JUNIOR ANNUAL CALENDAR, 2016, titanium, self-winding mechanical movement with annual calendar

Omega

Omega is one of the most renowned watch companies, having produced excellent watches since 1848 — although the name Omega didn't appear for another six decades. The company was first named after its founder, and later his sons as well: Louis Brandt et Fils. According to legend, the Brandts wanted their brand to be the last word in watchmaking, and eventually selected the final letter of the Greek alphabet as the company's name.

One of the largest pocket watch makers in Switzerland, Omega was among the first companies to manufacture and promote wristwatches; before World War I its catalog already listed several wristwatches for men, including a chronograph.

The company was innovative and interesting from the beginning; as early as 1892 it created the world's first minute-repeater wristwatch and had won numerous design competitions, as well as many observatory contests. As a result, it prospered into the 1920s, but the exigencies of the Depression and the fading demand for watches propelled Omega and Tissot to merge in 1930, forming a company called SSIH. Eventually other brands were brought in as well, including Lemania, Rayville, Lanco, Cortebert, Marc Favre, and Hamilton. SSIH would go on to be one of the companies that later formed the Swatch Group, which now owns Omega.

Some of Omega's great watches, past and present, include the Constellation, dating from 1952; the Seamaster, initially produced in 1948 and still one of Omega's most popular models; and the Speedmaster, which first appeared in 1957 and was NASA's pick to accompany astronauts into space (both Neil Armstrong and Buzz Aldrin wore Speed-masters on their lunar mission). The Speedmaster continues to be the mechanical watch of choice of the United States space program.

In the late 1990s Omega purchased a new innovation called the co-axial escapement from English master watch-maker George Daniels and began implementing it in its watches in 1999. Considered by many to be the first practical new watch escapement of the last two centuries, it was designed to reduce internal friction and dependence on lubrication, thus enabling a watch to require less frequent service. Today, most Omega watches contain co-axial escapements, and the technology remains completely proprietary.

Furthermore, Omega teamed up with the Swiss Federal Institute of Metrology (METAS) to create the new Master Chronometer certification in 2015. To qualify, a watch must perform to COSC chronometer standards under extremely taxing circumstances that include deep water pressure and intense magnetic fields. To date, Omega is the only company to have its watches Master Chronometer certified, though it is an open standard.

OMEGA CHRONOGRAPH REFERENCE CK 987, 1940, stainless steel, hand-wound mechanical movement with chronograph, multi-scale dial

OMEGA CONSTELLATION GENEVA OBSERVATORY, 1952, yellow gold with cloisonné enamel dial, self-winding mechanical movement

The recent trend toward vintage-inspired timepieces has been a boon for Omega, as the company has an extremely rich history upon which it can draw. The company even went so far as to laser scan original examples of the Speedmaster, Seamaster, and Railmaster (all of which turned sixty years old in 2017) and produce nearly identical copies of the 1950s watches with modern movements inside as a limited-edition anniversary set.

OMEGA 1894 (DIAL AND MOVEMENT), 1994, pink gold, mechanical movement

OMEGA CHRONOMÈTRE (DIAL AND MOVEMENT), 1940s, stainless steel, mechanical movement

While some brands specialize in one type of watch or another, Omega has a history of making watches for divers, pilots, race car drivers, scientists, and more. Often the technology developed for one niche finds its way into more all-purpose watches down the line too.

OMEGA SEAMASTER 300, c. 1962, stainless steel, self-winding mechanical movement

OMEGA FLIGHT-MASTER, 1978, stainless steel, hand-wound mechanical movement with chronograph, inner rotating bezel

OMEGA BULLHEAD CHRONOGRAPH, 1974, stainless steel, hand-wound mechanical movement with chronograph and date

OMEGA GLOBEMASTER, 2015, stainless steel, self-winding mechanical movement with co-axial escapement and date

OMEGA SEAMASTER AQUA TERRA > 15,000 GAUSS, 2013, stainless steel, self-winding mechanical movement with co-axial escapement and antimagnetic construction

OMEGA SEAMASTER AQUA TERRA 150M, 2017, stainless steel, self-winding movement with co-axial escapement and date

Magnetism is one of the worst things for a mechanical watch, disrupting its ability to keep accurate time. With the prevalence of electronics in our daily lives, we're exposed to more magnetic fields than ever before. To counter this, Omega has spent the last decade working to make its movements resistant through the use of non-ferrous metals, and now most of its calibers are resistant to 15,000 Gauss or more.

OMEGA RANCHERO REFERENCE 2990.1, 1958, stainless steel, hand-wound mechanical movement

OMEGA SEAMASTER 600 "PLOPROF," 1971, self-winding mechanical movement with date, case with locking bezel, and crown

OMEGA SPEEDMASTER REFERENCE 2915-2, 1958, stainless steel, hand-wound mechanical movement with chronograph, broad-arrow hands

TACHYMÈTRE
OMEGA
Speedmaster

TACHYMÈTRE BASE 1000
OMEGA
Speedmaster

TACHYMÈTRE
OMEGA
Speedmaster
PROFESSIONAL

TACHYMÈTRE
OMEGA
Speedmaster
PROFESSIONAL
MARK II

TACHYMÈTRE
OMEGA
Speedmaster
PROFESSIONAL

TACHYMÈTRE
OMEGA
Speedmaster
PROFESSIONAL

OMEGA
Speedmaster
CO-AXIAL
CHRONOMETER

OMEGA
Speedmaster
PROFESSIONAL
00:38:26

The Speedmaster is one of those watches that is instantly recognizable, even to the uninitiated. The first watch to have an external bezel with a tachymeter scale, it originally debuted in 1957 with the reference CK 2915 and was intended as a racing watch. What it has become most famous for, however, is being the official watch choice of NASA, worn by everyone from Apollo astronauts to those embarking on space walks from the International Space Station.

OMEGA SPEEDMASTER PROFESSIONAL, made in 1969–1972 to commemorate *Apollo Xl*, yellow gold, mechanical movement with chronograph

OMEGA SPEEDMASTER JAPANESE RACING EDITION, 2004, stainless steel, hand-wound mechanical movement with chronograph

Parmigiani

Michel Parmigiani is another of the talented watchmakers who has set up his own shop and created a line of beautifully designed and well-made watches, although he first made a name for himself by refurbishing a watch known as the Montre Sympathique (originally crafted by Abraham-Louis Breguet) and for assisting on the reconstruction of Giovanni de Dondi's astronomical clock from the mid-fourteenth century.

Parmigiani started off by creating a watchmaking repair and service company, but with an influx of capital in 1990 he was able to devote himself to creating new timepieces.

The company was purchased by the Sandoz Foundation in 1996, and in 2003 the movement manufacturer Vaucher Manufacture Fleurier was spun off as a supplier of high-grade movements. A sizable percentage of these are supplied to Parmigiani, though Vaucher also supplies to brands as diverse as Baume & Mercier and Richard Mille.

Parmigiani has also played a crucial role alongside Chopard and Bovet in establishing a Fleurier Quality Foundation (QF — for the French *Qualité Fleurier*) label, involving quality construction and finishing criteria similar to those needed to qualify for the Geneva Seal, but combined with an independent chronometer certification from the COSC.

In early 2016, the watchmaker unveiled the Senfine Concept Watch, which used an entirely new escapement that beats at 16 Hz, four times as quickly as those in most modern watches. Paradoxically, the Senfine is extremely energy efficient and can run for 70 days without needing to be wound. However, it is still only a prototype and the new technology is yet to be industrialized or commercialized.

Parmigiani is now best known for its Tonda dress watches, which feature slim, well-decorated movements paired with simple, clear dials, and the watches produced in partnership with Bugatti, which range from simple chronographs with Bugatti logos on them to extremely complex tourbillon watches designed to look like the supercar's engine.

PARMIGIANI FLEURIER CHRONOR ANNIVERSAIRE, 2016, white gold, hand-wound mechanical movement with split-seconds chronograph and big date

PARMIGIANI FLEURIER OVALE PANTOGRAPHE, 2015, rose gold, hand-wound mechanical movement with telescoping hands, power reserve, and date

PARMIGIANI FLEURIER TORIC TOURBILLON, 2000s, platinum, mechanical movement with tourbillon

PARMIGIANI FLEURIER TONDA 1950, 2015, stainless steel, self-winding mechanical movement with micro-rotor winding system

PARMIGIANI FLEURIER TONDA CENTUM, 2015, white gold, self-winding mechanical movement with perpetual calendar, high-accuracy moon-phase, and retrograde date

Patek Philippe

If any name deserves top billing in the watch industry, it is Patek Philippe. It is the king, and shows no sign of relinquishing its throne.

Patek Philippe was founded in Geneva in 1839 by an exiled Polish nobleman, Count Antoni Norbert de Prawdzic (1811–1877), and his compatriot Francois Czapek (b. 1811). When the former became a Swiss citizen, he changed his name to Patek, ensuring that future watch lovers would be able to pronounce the name of their favorite brand.

The brand's first watches were signed Patek, Czapek & Co. However, in the mid-1840s, Czapek left the company after quarreling with Patek, and French watchmaker Jean Adrien Philippe (1815–1894) joined it. Philippe later became the inventor of the company's stem-winding and hand-setting mechanism, and in 1851, his name became part of the firm's. Patek Philippe quickly became a leader in its field, introducing many technical improvements, including the sweep seconds hand; it also produced interesting and reliable complications, such as chronographs, perpetual calendars, and repeaters.

Patek Philippe also produced many remarkable custom-made watches for individual clients — including Americans Henry Graves and James Ward Packard — with as many as twenty-four complications. These pocket watches have garnered the highest prices ever at auction; the record is held by what's known as the Henry Graves Supercomplication, which sold at Sotheby's in 2014 for more than $24 million.

During the Depression, the company, like many others, did poorly, but was rescued when brothers Charles and Jean Stern acquired the majority of Patek Philippe shares; Stern family members still own and run the firm.

Shortly after World War II, Patek Philippe established an electronic division, and in the 1950s, the company pioneered quartz technology, filing several patents and winning multiple awards. The firm also produced high-end industrial and electronic timepieces that were installed in power stations, hospitals, airports, and other public buildings and factories.

Patek Philippe's most famous line, the Calatrava, was introduced in 1932 with the reference 96 (although decades passed before the company officially used that name). Many of the most collectible Patek Philippe references are Calatravas, including the oversized reference 570 and the reference 2526, the first Patek Philippe with a self-winding movement. Traditionally more refined dress watches, today's Calatrava collection includes sportier models — even a watch with a pilot's dial and a stainless-steel case.

While Audemars Piguet's Royal Oak started the luxury steel sport watch revolution in 1972, Patek Philippe's Nautilus has arguably become just as important over the ensuing decades. Introduced in 1976, it was also designed by Gérald Genta, and has a curvier shape and softer lines than its predecessor.

Patek Philippe has always been shrewd in its approach to the vintage watch market. If your Patek is broken, the company will fix it for you no matter how old it is — even if the repairer has to make pinions and wheels that would never fit into any other watch. You will probably have to pay a considerable fee for this service, but not as much as you would for a new Patek.

Patek Philippe also runs the most beautiful watch museum in the industry. To stock it, the company has purchased (and continues to purchase) many of its old watches, a tactic that has also helped keep vintage prices high at auctions.

Ultimately, no watches are more collectible than vintage Patek Philippes (with the possible exception of Rolexes). In particular, complicated watches such as perpetual calendars, chronographs, and perpetual calendar chronographs (Patek Philippe created the first such serially produced watch in 1941 with the reference 1518) are highly sought-after, especially those in original, unaltered condition. Prices at auction have soared over the last decade, with high six-figure prices now the norm for many references, and seven-figure prices not terribly uncommon.

Patek Philippe is not the most innovative of watch companies, but its conservatism is one of its greatest strengths. It doesn't bend to fashion and its customers' tastes are often shaped by what it offers, rather than the other way around. The firm also maintains a relatively tight distribution network and the experience of buying a Patek Philippe has maintained a particular type of mystique in an age of instant gratification.

PATEK PHILIPPE REFERENCE 3940J, c. 1989, yellow gold, self-winding mechanical movement with perpetual calendar, moonphase, and 24-hour indicator

PATEK PHILIPPE REFERENCE 1526, 1951, rose gold, hand-wound mechanical movement with perpetual calendar and moonphase

PATEK PHILIPPE REFERENCE 5101, 2006, platinum, hand-wound mechanical movement with tourbillon and 10-day power reserve, chronometer certified

PATEK PHILIPPE REFERENCE 3939HJ, 1993, yellow gold, hand-wound mechanical movement with tourbillon and minute repeater, enamel dial with applied Breguet numerals

PATEK PHILIPPE REFERENCE 5496P, c. 2014, platinum, self-winding mechanical movement with perpetual calendar, retrograde date, and moonphase, retailed by Tiffany & Co.

PATEK PHILIPPE REFERENCE 5235G, 2012, white gold, self-winding mechanical movement with regulator display and annual calendar

PATEK PHILIPPE REFERENCE 1463, 1942, yellow gold, hand-wound mechanical movement with chronograph, dial with applied Breguet numerals

PATEK PHILIPPE REFERENCE 130, 1939, white gold, hand-wound mechanical movement with chronograph, salmon-gilt dial

PATEK PHILIPPE REFERENCE 3070P, 2016, platinum, hand-wound mechanical movement with split-seconds chronograph

PATEK PHILIPPE REFERENCE 5070, c. 2008, platinum, hand-wound mechanical movement with chronograph

PATEK PHILIPPE REFERENCE 3597/2, 1970s, yellow gold, quartz Beta 21 movement

PATEK PHILIPPE AQUANAUT REFERENCE 5167A, 2008, stainless steel, self-winding mechanical movement with date

PATEK PHILIPPE NAUTILUS JUMBO REFERENCE 3700/1, 1976, stainless steel, self-winding mechanical movement with date

PATEK PHILIPPE REFERENCE 570, 1960s, yellow gold, hand-wound mechanical movement

PATEK PHILIPPE REFERENCE 565, 1949, stainless steel, hand-wound mechanical movement, luminous hands and dial with Breguet numerals

PATEK PHILIPPE REFERENCE 2526, 1954, rose gold, self-winding automatic movement, enamel dial co-signed by retailer Freccero

PATEK PHILIPPE REFERENCE 3417 "AMAGNETIC," 1961, stainless steel, hand-wound mechanical movement with anti-magnetic protection

PATEK PHILIPPE CHRONOMETRO GONDOLO, 1920s, yellow gold, mechanical movement

PATEK PHILIPPE REFERENCE 3424, 1968, pink gold, mechanical movement, designed by Gilbert Albert

PATEK PHILIPPE BANANA REFERENCE 2442, 1951, yellow gold, mechanical movement

PATEK PHILIPPE 150TH ANNIVERSARY JUMPING HOUR WATCH REFERENCE 3969, 1989, pink gold, mechanical movement

PATEK PHILIPPE REFERENCE 2523, 1953, yellow gold, hand-wound mechanical movement with world time function and two crowns

PATEK PHILIPPE REFERENCE 5960, 2006, platinum, self-winding mechanical movement with annual calendar, chronograph, and power reserve

PATEK PHILIPPE REFERENCE 1518, 1950, rose gold, hand-wound mechanical movement with perpetual calendar, moonphase, and chronograph

Chronographs, particularly with perpetual calendars, and World Time watches, are guaranteed to be top sellers. They have achieved a cult status of their own.

PATEK PHILIPPE REFERENCE 5970G, 2007, white gold, hand-wound mechanical movement with perpetual calendar, moon-phase, 24-hour indicator, and chronograph

PATEK PHILIPPE REFERENCE 5004, 2009, rose gold with unique black dial, hand-wound mechanical movement with perpetual calendar, split-second chronograph, moonphase, and 24-hour indicator

PATEK PHILIPPE REFERENCE 5102, 2002, white gold, self-winding mechanical movement with mean solar time indicator, nocturnal sky chart of the Northern Hemisphere, moonphase and moon orbit indicators, and time of the meridian passage of Sirius and moon

PATEK PHILIPPE REFERENCE 5110, 2000, platinum, self-winding mechanical movement with world time

PATEK PHILIPPE REFERENCE 5016, 2009, platinum, hand-wound mechanical movement with tourbillon, minute repeater, and perpetual calendar with retrograde date

Piaget

Although Piaget is known as much for its jewelry as for its watches, the company is arguably the most skilled producer of ultra-slim movements and has been supplying thin ébauches to other watch brands, including Omega, Longines, Rolex, and Audemars Piguet, for nearly a century.

Because few are aware of this fact, experts often refer to Piaget as "the best, least respected company in the business." Those who do not take the company seriously are making a big mistake — Piaget has been making excellent watches and movements for longer than most brands have been in existence. Piagets have been making watches in Switzerland since the mid-nineteenth century; George-Edouard Piaget (1855–1931), the current company's founder, began producing them in 1874, and later his grandsons, Gérald and Valentin, would spend the mid-twentieth century continuously setting and breaking records in ultra-thin watchmaking.

Among Piaget's other accomplishments was the creation, in 1956, of the caliber 9P, the slimmest mechanical movement then made. Just four years later, the 12P was introduced as the world's slimmest self-winding movement. Today, Piaget makes dozens of different ultra-thin movements in-house, more than any other manufacturer, and they are used to power the popular Altiplano line of dress watches. The pinnacle of this line is the Altiplano 900P, a watch that integrates the movement, case, and dial all into one unit to achieve a thinness of just 3.65mm.

Despite all of this, the company is still most famous for its gold Polo watches, which were the ultimate lifestyles-of-the-rich-and-famous watches in the 1980s. The Polo name was recently resurrected for the Polo S, a stainless-steel sport watch containing a high-quality movement that aims to compete with the likes of the Audemars Piguet Royal Oak and Patek Philippe Nautilus.

In 1988, Cartier acquired Piaget (along with Baume & Mercier, which Piaget had acquired twenty-three years earlier). This became the base for what eventually turned into the Vendome Group and later the Richemont Group.

Piaget has been immortalized in pop culture as well; when the writers for the television show *Seinfeld* (some of whom are themselves watch collectors) wanted to have an unseemly character shoplift a prestigious, brand-name watch, they had her pick off a Piaget.

PIAGET, c. 1968, white gold and diamond, mechanical movement

PIAGET, 1970s, yellow gold, mechanical movement

PIAGET, late 1970s, yellow gold with onyx and tiger’s eye dial, mechanical movement

PIAGET REFERENCE 9702, 1970s, white gold with jasper dial, hand-wound ultra-slim mechanical movement

PIAGET ALTIPLANO ULTIMATE 910P, 2018, white gold, self-winding ultra-slim mechanical movement. The thinnest self-winding watch in the world upon its release.

PIAGET POLO S, 2016, stainless steel, self-winding mechanical movement with date

PIAGET ALTIPLANO CHRONOGRAPH, 2015, rose gold, hand-wound mechanical movement with flyback chronograph and second time zone display

Ressence

One of the crop of independent watch brands specializing in non-traditional methods of displaying the time, Ressence (a portmanteau of the words *renaissance* and *essense*) has developed an extremely loyal following amongst savvy watch collectors, despite being less than a decade old.

In 2011, founder Benoît Mintiens, an industrial designer by trade, introduced his very first watch, the Zero Series. The Zero Series introduced the Ressence Orbital Convex System, or ROCS, which eventually became Ressence's signature time display. Instead of utilizing hands, Ressence watches use a series of nested disks and rings marked with "hands" and graduations that rotate within one another to show the time. This system is completely proprietary to Ressence and unique within the world of watchmaking.

Over the years, Ressence has used the system in different ways and has updated it to satisfy specific needs. The company's best-known watch is the Type 3, which completely separates the mechanical movement and display discs in two separate, sealed chambers that interact via magnets through a slim titanium plate. The top chamber is filled with a special oil that projects the discs onto the domed sapphire crystal, making it appear as if the markings are painted directly onto the glass. It looks unlike any other watch ever made.

Though the watches are made in Switzerland and the movements are based on heavily modified versions of otherwise standard calibers, the company was founded in Antwerp, Belgium, where it is still headquartered today.

RESSENCE TYPE 1 SQUARED, 2017, stainless steel, self-winding movement with proprietary orbital disc system and day of the week display

RESSENCE TYPE 1, 2014, titanium, self-winding movement with proprietary orbital disc system and day of the week display

RESSENCE TYPE 3, 2013, titanium, self-winding mechanical movement with proprietary oil-filled orbital disc system, with date, day of the week, and oil temperature display

Richard Mille

Watch designer Richard Mille (b. 1951), once the watch tsar of the French jewelry house Mauboussin, created his own company in 2001 to create high-performance watches that mix traditional mechanisms with new materials and manufacturing techniques.

Mille's connections to some of the modern watch industry's most skilled suppliers played a key role in him being able to bring his creations to life, including both his personal and professional relationships with Audemars Piguet Renaud & Papi, one of the most skilled complication makers and horological consultants in Switzerland.

Most of Mille's watches share a number of characteristics, including tonneau-shaped cases made from composite materials chosen for (and in many cases developed specifically for) their combination of strength and lightness, skeletonized movements that are highly shock-resistant, and, of course, price tags that would make an oligarch blush.

Smart marketing and celebrity partnerships have been key to Richard Mille's success. Formula One heavyweights such as Felipe Massa and Jean Todt, top golfer Bubba Watson, and legendary Spanish tennis player Rafael Nadal can all be seen sporting their custom Richard Mille watches as they capture championships in their respective sports.

In less than two decades, Richard Mille has progressed from a nearly unknown watch company to one of the industry's most successful, often boasting large waiting lists for its most desirable limited editions, even those with six- and seven-figure prices.

RICHARD MILLE RM 035 "RAFAEL NADAL," 2011, magnesium-aluminum alloy and titanium, hand-wound skeletonized mechanical movement

RICHARD MILLE RM 59-01 "YOHAN BLAKE," 2013, lightweight composite and titanium, hand-wound skeletonized mechanical movement with tourbillon

RICHARD MILLE RM 56-02, 2014, sapphire, hand-wound skeletonized mechanical movement with tourbillon, suspended in the case with cable-and-pulley system

RICHARD MILLE RM 70-01 "TOURBILLON ALAIN PROST," 2017, Carbon TPT, hand-wound mechanical movement with proprietary odometer complication

RICHARD MILLE RM 27-02 "TOURBILLON RAFAEL NADAL," 2015, NTPT Carbon, hand-wound mechanical movement with tourbillon

RICHARD MILLE RM 038 "BUBBA WATSON," 2011, magnesium alloy and titanium, hand-wound skeletonized mechanical movement with tourbillon

RICHARD MILLE RM 67-01, 2016, stainless steel and titanium, self-winding skeletonized mechanical movement with date

Roger Dubuis

The Swiss-born Roger Dubuis (1940–2017) spent fourteen years at Patek Philippe as a specialist in complicated time-pieces. Then, in 1980, he became an independent watch-maker, restoring antique collectors' timepieces, developing projects for major brands, and researching what eventually became his specialty: retrograde complications.

Working with partner Carlos Dias, Dubuis introduced his first watches in 1995. From the beginning, the goal was to have every watch that left the manufacturer qualify for the Geneva Seal, a stringent set of regulations covering technical and decorative execution that include the watch having to be assembled in the Canton of Geneva. Today, Roger Dubuis is the only company that can claim 100 percent of its production is Geneva Seal certified.

Dubuis himself left the brand in 2003, and in 2008 it was acquired by the Richemont Group. The two events radically changed the direction of the brand and though Dubuis returned to his eponymous brand in 2011 as a consultant, the watches Roger Dubuis makes today are nothing like those he was producing in the 1990s.

Today, Roger Dubuis makes large, brash watches that combine technical brilliance, unusual materials, and non-traditional styling. The oversized Excaliber watches often have some combinations of brightly colored decoration, highly skeletonized movements, carbon fiber components, and multiple tourbillons (the limited edition Quatuor combines four in one movement). They're technically brilliant and extremely well made, but not for the faint of heart.

ROGER DUBUIS EXCALIBER SPIDER DOUBLE FLYING TOURBILLON, 2015, black DLC titanium, hand-wound mechanical movement with two flying tourbillons

ROGER DUBUIS BI-RETROGRADE CALENDAR, 2000, white gold, mechanical movement with day and date and moonphase

ROGER DUBUIS HOMMAGE BIRETROGRADE PERPETUAL CALENDAR, late 1990s, yellow gold, mechanical movement with perpetual calendar and moonphase

ROGER DUBUIS EXCALIBER QUATUOR COBALT MICROMELT, 2016, cobalt chrome, hand-wound mechanical movement with four tourbillons and power reserve

Rolex

Ask the average person on the street to name a good watch, and nine out of a ten will say "Rolex." Few brands stand out as powerfully in their field, and even fewer are able to do so for as long as Rolex has.

Rolex was established by Hans Wilsdorf (1881–1960), who was born in Germany but moved to Switzerland in 1900, where he became interested in watches. He then took a position in London with a company that imported watches and married an Englishwoman.

Although the pocket watch was still the preeminent timepiece for men, Wilsdorf decided that the future belonged to the wristwatch, and so he created a London-based company called Wilsdorf & Davis to import watches (Davis was his brother-in-law). Within a few years, the company was one of the foremost watch merchants in the United Kingdom. Wilsdorf next wanted to create an outstanding brand to compete with the others he was already selling. It is said he chose the name Rolex because, while he was sitting on a bus, it suddenly occurred to him that "rolex" was the sound of a watch being wound. (Yet another version of the legend is that the name is an amalgam of *horlogerie exquise*, or "exquisite watchmaking," though the true origin is unknown.)

At the time, few pocket watch manufacturers were producing small movements that were accurate and reliable enough to fit inside a wristwatch. The Swiss company Aegler agreed to supply Wilsdorf with movements. In 1914, the new brand won the first chronometer certification ever given to a wristwatch. After World War I, when an import tax increase of 33 percent made the Swiss movements prohibitively expensive, Rolex moved to Switzerland; in 1920, Montres Rolex S.A. was founded in Geneva.

Because watches of the time were easily damaged by dust and moisture, Wilsdorf developed a revolutionary screw-down crown and caseback mechanism, and in 1926 he introduced the Rolex Oyster, a highly accurate, waterproof watch. (Wilsdorf came up with the name in honor of the work it takes to pry open the shell of an actual oyster.)

When Wilsdorf heard that an English secretary named Mercedes Gleitze was planning to swim the English Channel, he asked her to wear an Oyster. The watch worked as well when Gleitze emerged on shore as when she'd first entered the water. Wilsdorf then made sure that stores selling Rolexes featured aquariums in their windows, all holding submerged Rolexes. The campaigns paid off. The name Rolex became synonymous with dependability.

New models and innovations followed. In 1931 came the Perpetual, a self-winding watch powered by the movement of the wearer's arm, based on technology developed by Harwood, that Wilsdorf purchased; in 1945, the company introduced the Datejust, the first wristwatch to show the date magnified two and a half times by a lens. Less than a decade later Rolex followed with the Day-Date and in 1953 Rolex unveiled the Submariner, essentially creating the archetype for the modern dive watch.

Wilsdorf's great gift was his foresight. He bet on the wristwatch very early and each of his major innovations (putting the timepiece on the wrist, making it accurate, making it waterproof, and making it automatic) helped create the modern wristwatch as we know it. When Hans

Wilsdorf died in 1960, his estate established the Hans Wilsdorf Foundation, making Rolex a not-for-profit company.

When it comes to vintage watches, the only brand that can rival Rolex is Patek Philippe. However, while Patek Philippe's strength is most pronounced at the top of the market, there are highly desirable Rolex watches at every price point from a few thousand dollars to millions of dollars. In particular, the Rolex Daytona chronograph has become arguably the most collectible vintage watch of the last decade, with rare variants and examples in top condition outperforming nearly every other model.

Though true for all vintage watches, when it comes to Rolex, qualities like an unpolished case and an original, unrestored dial can be the difference between an exceptional watch and a completely pedestrian one. Additionally, driven by the increased interest, models are being subdivided extremely finely by dealers and collectors alike, with individual dial markings and slight color differences drastically altering prices.

Rolex continues to make high-quality, dependable watches. The design of these watches changes less than most brands — a 2017 Datejust closely resembles one from fifty years ago — which is appealing to some and rather boring to others. And the company doesn't produce a wide variety of complications either; there is no Rolex tourbillon, no ten-complication Rolex. Instead, the company's strength lies in its research and its engineering. Rolex continually upgrades its products from a purely functional standpoint — making testing standards more stringent, upgrading the quality of its stainless steel — and it does so with little to no fanfare.

These are superb mechanical watches that can appeal to both people who don't know anything about mechanical watches and those who consider themselves experts.

ROLEX OYSTER PERPETUAL REFERENCE 6593, 1959, 14k yellow gold, self-winding mechanical movement

Hans Wilsdorf realized that chronometer certification would help convince a wary public of the accuracy of Rolex's products, and he used successful results to create legend. At one point, people suspected Rolex was fabricating test results because no wristwatches had ever been certified to such high degrees of accuracy before.

ROLEX DATEJUST REFERENCE 16030, 1980s, stainless steel, self-winding mechanical movement with date

ROLEX SUBMARINER REFERENCE 1680, 1972, stainless steel, self-winding mechanical movement with date

ROLEX DAY-DATE REFERENCE 1803, 1974, yellow gold, self-winding mechanical movement with day and date

ROLEX DAYTONA REFERENCE 6239, 1968, stainless steel, self-winding mechanical movement with chronograph

The so-called “Paul Newman” Daytonas are amongst the most collectible and desirable watches from any maker. The watch earned its name because the American actor famously wore one of the chronographs featuring the exotic square markers and two-tone dials. Paul Newman’s actual Daytona, left, sold at Phillip’s in New York City in October 2017 for $17.8 million, making it the most expensive wristwatch ever sold.

Rolex enjoyed three big coups in the watch-making business: accuracy, water resistance, and self-winding. Screw-down crowns and backs made early Oysters more water resistant.

ROLEX OYSTER, late 1920s, pink gold, mechanical movement

ROLEX OYSTER REFERENCE 678, 1935, yellow gold, mechanical movement

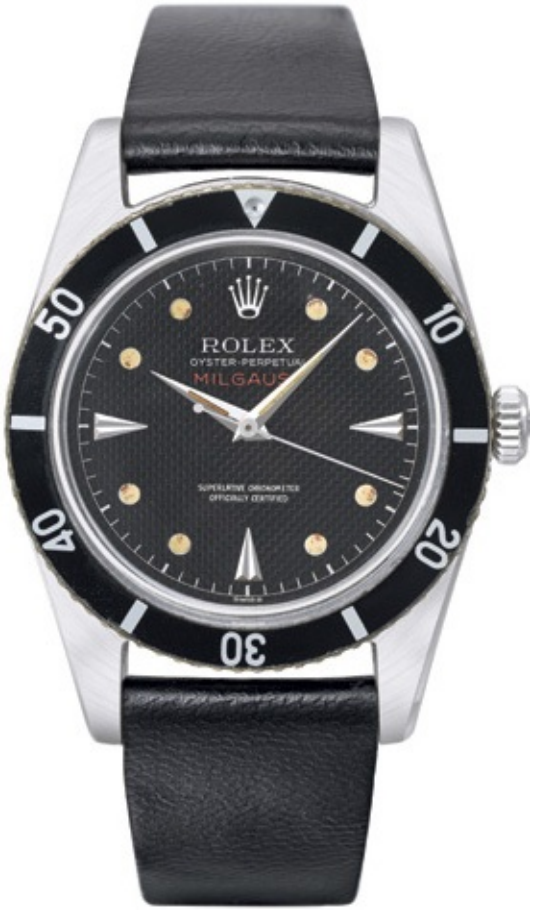
ROLEX OYSTER PERPETUAL, c. 1933, yellow gold, self-winding mechanical movement

ROLEX PRINCE BRANCARD REFERENCE 971U, 1930, sterling silver, hand-wound mechanical movement with jump hour

ROLEX PRINCE BRANCARD TIGER STRIPE REFERENCE 971, 1929, white and yellow gold, hand-wound mechanical movement

While Rolex is best known for its sport watches with rugged steel cases and functional rotating bezels like the Submariner and GMT-Master, the brand did produce limited numbers of watches with hand-made enamel dials featuring artistic motifs in the 1930s, ’40s, and ’50s.

ROLEX PERPETUAL CHRONOMETER REFERENCE 6099, c. 1952, yellow gold, self-winding mechanical movement, cloisonné enamel dial hand made by Nelly Richard



ROLEX MILGAUSS REFERENCE 6543, 1955, stainless steel, self-winding mechanical movement with anti-magnetic protection

ROLEX MILGAUSS REFERENCE 1019, 1970, stainless steel, self-winding mechanical movement with anti-magnetic inner caseback

The Milgauss is one of the more idiosyncratic watches Rolex has ever made. Developed with scientists at Switzerland's CERN laboratory in mind, the original reference 6541 featured a strange rotating bezel, a lighting bolt–shaped seconds hand, and protection from strong magnetic fields. Over time, the design was changed and refined, with the reference 1019 now being the version most collectors think of first.

ROLEX REFERENCE 6238, 1968, stainless steel, hand-wound mechanical movement with chronograph

ROLEX OYSTER CHRONOGRAPH REFERENCE 3525, 1942, stainless steel, hand-wound mechanical movement with chronograph, salmon dial with colored scales

ROLEX OYSTER QUARTZ REFERENCE 5100, 1972, white gold, quartz Beta 21 movement with date

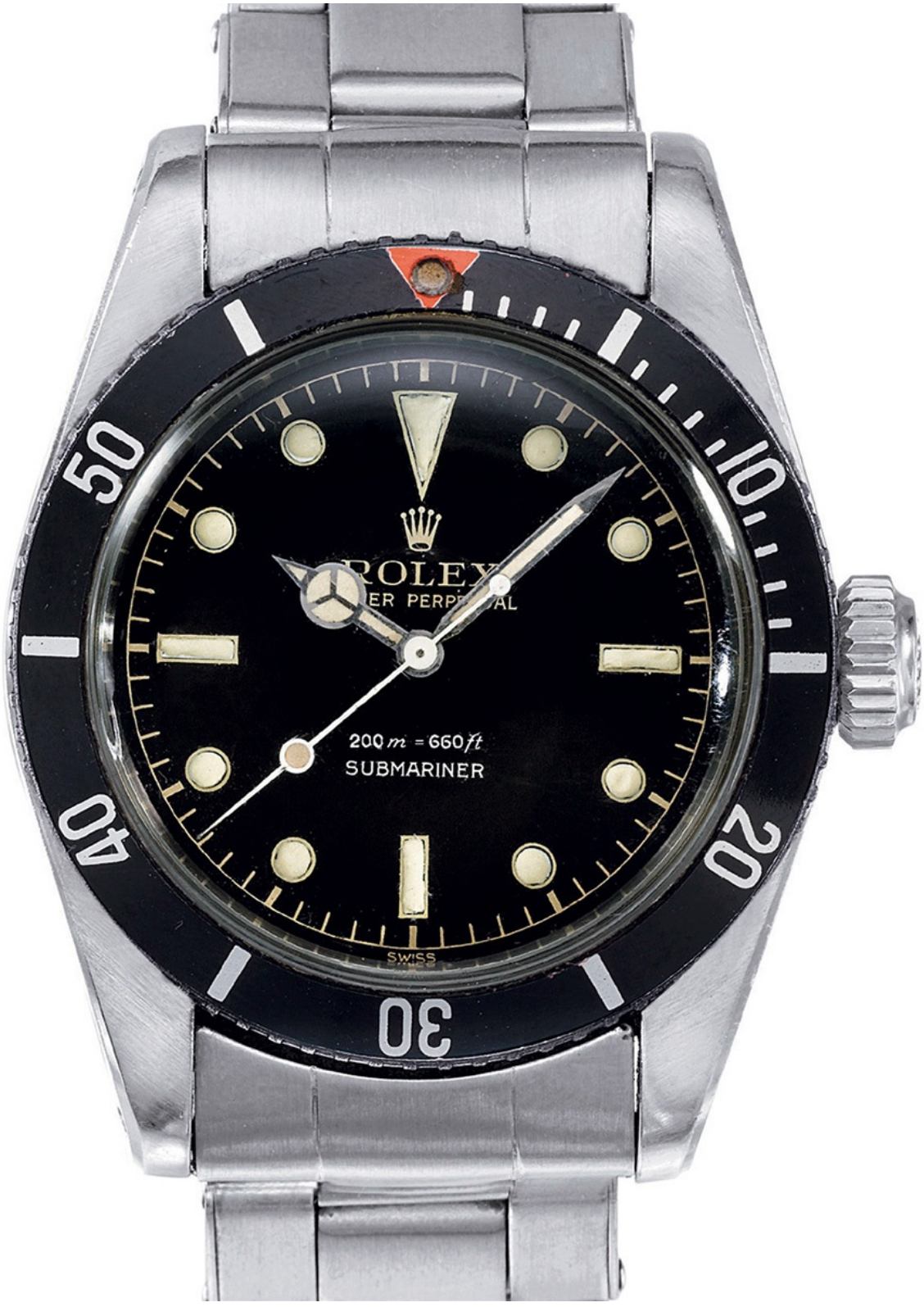
Collectors are particularly passionate about Rolex sports models, which have long been associated with explorers, adventurers, and athletes. In addition to the famous James Bond Submariner, an early version of the GMT was worn by Chuck Yeager as well as several astronauts. Rolex supplied GMTs to Pan Am pilots, helping to seal their reputation as serious pilots' watches.

ROLEX EXPLORER REFERENCE 1016, 1984, stainless steel, self-winding mechanical movement

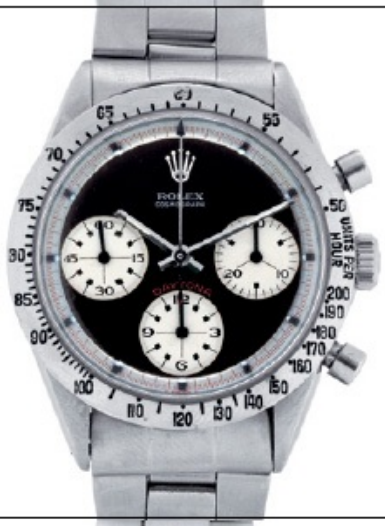
ROLEX GMT-MASTER REFERENCE 16753, 1979, stainless steel and yellow gold, self-winding mechanical movement with 24-hour hand and date

ROLEX EXPLORER II REFERENCE 1655, 1981, self-winding mechanical movement with 24-hour hand and date

ROLEX GMT-MASTER REFERENCE 1675, 1966, stainless steel, self-winding mechanical movement with 24-hour hand and date



ROLEX SUBMARINER REFERENCE 6538, 1958, stainless steel, self-winding mechanical movement



Introduced in 1963, the Rolex Daytona may well be the most difficult to acquire mass-produced wristwatch in production today. It has a cult status unlike that of nearly any other watch and rare vintage examples set new record prices — often in the millions — each time auctions are held. On this page is a selection of models from throughout the Daytona's more than fifty years of continuous production.

ROLEX
DAYTONA
30
15
20
12
3
9

Seiko

Many watch fans assume this Japanese company is a product of the quartz revolution, but Seiko has been in business since the 1880s. Founded by Kintaro Hattori (1860–1934), the company was first a retail store in Tokyo, then a clock manufacturer, and later a maker of pocket watches and alarm clocks (the Japanese word *seikosha* means precision). Just as World War I was starting, Hattori decided that the company should begin manufacturing wristwatches. It did so while continuing to make other timekeeping devices.

Seiko's mechanical wristwatch movements initially copied Swiss movements, but its watchmakers soon began to innovate, developing a very simple and efficient automatic winding system called the Magic Lever, as well as one of the world's first automatic chronographs in the late 1960s.

When Bulova came out with its Accutron at the end of the 1950s, Seiko also looked into new wristwatch technologies; with foresight, it opted for quartz rather than the electronic tuning fork. (Seiko already had been making quartz clocks for some time.) Seiko entered its quartz timekeeper in the Swiss chronometer competitions at Neuchâtel and then Geneva for only five years total, but in that short time went from 144th to 1st place overall in the final observatory com-petition held in Geneva in 1968. At the end of 1969, its quartz Astron, the first mass-produced quartz wristwatch, went on sale in Japan.

In 1969, Seiko also perfected the vertical clutch chronograph, a device that made chronograph mechanisms simpler and more reliable, while simultaneously improving their performance. Invented but never fully developed by the Swiss company Pierce, it was ignored for years by the Swiss brands. But in 1988 Piguet emulated it, and eventually, Rolex, Omega, and Jaeger-LeCoultre did as well. It's now standard in any high-end chronograph.

Continuing Seiko's technological achievements were the first computer wristwatch, appearing in 1984, and the Kinetic AGS, marketed in 1994 as a "quartz watch without a battery" — the wearer's movements generated the electricity needed to run the watch, just as an automatic mechanical watch does.

The company's more recent groundbreaking wristwatch technologies include Spring Drive, which is a hybrid mechanical movement with a quartz regulator that keeps time with a constantly rotating flywheel, which results in a second hand that smoothly sweeps around the dial instead of ticking in small increments.

For decades, Seiko watches were thought to be inexpensive alternatives to fine Swiss watches in the West, largely due to Seiko's best product lines only being available in Japan. Although the first Grand Seiko watches were made in 1960, it was only in 2010 that Seiko began distributing them outside of Japan, and since then collectors all over the world have begun to understand just how exceptional Seiko watches can be. Above all else, they are distinctly un-Swiss, with a different aesthetic style, different finishing techniques, and, at their core, a different set of values.

At the pinnacle of Seiko's massive portfolio sits Credor, a brand reserved for the company's finest creations. These include the Eichi II, a time-only watch with a hand-painted

porcelain dial and one of the most finely finished movements in the world, as well as the Spring Drive Sonnerie, a chiming watch that borrows technology from traditional Japanese wind chimes and whose sound rivals that of any repeating watch from Switzerland’s finest makers.

GRAND SEIKO SBGB251, 2017, platinum, hand-wound mechanical movement

SEIKO CREDOR EICHI II, 2014, platinum, hand-wound spring drive movement with power reserve

GRAND SEIKO SBGM221, 2017, stainless steel, self-winding mechanical movement with 24-hour GMT function and date

GRAND SEIKO SBGA11 "SNOWFLAKE," 2010, titanium, self-winding Spring Drive movement with date

GRAND SEIKO 9F, 2015, stainless steel, high-accuracy quartz movement with date

SEIKO PRESAGE COCKTAIL TIME, 2010, stainless steel, self-winding mechanical movement with date

SEIKO ASTRON SSE013, 2017, stainless steel with black coating, solar-powered quartz movement with GPS technology and chronograph

GRAND SEIKO SBGJ005, 2014, stainless steel, self-winding mechanical movement with second time zone and date

The Seiko Watch Corporation includes a wide range of sub-brands that include Seiko 5 watches you can purchase for under $100 on Amazon up through Credor pieces that have multi-year wait lists and compete with the best watches coming out of Switzerland. In the middle you'll find Prospex, Astron, Presage, and, of course, Grand Seiko.

SEIKO PROSPEX SRPB09, 2017, stainless steel, self-winding mechanical movement with day and date

SEIKO PROSPEX SRPA83 PADI, 2017, stainless steel and ceramic, self-winding mechanical movement with day and date

SEIKO PROSPEX DIVER SLA017, 2017, stainless steel, self-winding mechanical movement with date, a re issue of the very first Seiko dive watch from 1965

Sinn

More than half a century old, this company is renowned for its tough, hard-wearing tool watches. The firm constructs instruments for the wrist for professional pilots and divers — and people who dream of flying planes and undersea adventure. Sinn watches are standard issue for multiple divisions of Germany's police, armed forces, and rescue services.

Helmut Sinn (b. 1916), the company's founder, was, in fact, a pilot and flight instructor, hence designs that incorporate features resembling those of an airplane's instrument panel. In 1994, Sinn sold the company to IWC veteran Lothar Schmidt, who committed to developing watches that work well under extreme conditions, few of which the average wearer will ever encounter, including high and low pressure, and altitude, intense heat and cold, magnetic interference, and submergence in liquids.

Schmidt's interest in innovation spurred the brand to invest in new technologies, including argon-filled watches, super-hardened Tegimented stainless steel cases, and lubrication-free DIAPAL escapements. In 2017, the company moved into a much larger new headquarters in Frankfurt that will allow Sinn to bring more of its production and assembly in-house.

SINN EZM 1.1, 2017, stainless steel, self-winding mechanical movement with central chronograph and date

SINN 103 ST SA E, 2017, stainless steel, self-winding mechanical movement with chronograph, day, and date

SINN MODEL U1, 2005, stainless steel, self-winding mechanical movement with date; water-resistant to 1,000 meters

SINN EZM 12, 2017, stainless steel and black DLC titanium, self-winding mechanical movement with day and date, highly resistant to magnetic fields and pressure changes

Swatch

Swatch is the Swiss mouse that roared. In 1978, ETA, the movement division of the watch company SMH, was determined to create a better and slimmer quartz movement than the contemporary Japanese models. The Japanese were winning the race for market dominance as mechanical watches lost favor and the Swiss lost jobs — employment dropped from more than ninety thousand people in sixteen hundred companies to about thirty thousand people in three hundred companies.

ETA succeeded: The movement, just under two millimeters tall, was the thinnest quartz movement ever produced; it made its first appearance as the Concord Delirium model, although Eterna and Longines also launched their own versions.

These models were not cheap, however, so the decision was made to compete with the Japanese in price as well as slimness. By the early 1980s the watch that eventually became the Swatch was developed. It was an inexpensive, all-plastic quartz watch in which the case's inside back was also its mainplate.

The key to the Swatch watch's success was keeping these products from looking cheap — they had to be inexpensive yet stylish. And they had to come in a variety of colors.

In 1983, the first watches marketed as Swatches were introduced, and they were immediately successful; within two years, more than ten million had been produced. From then on, the company introduced new models and designs every year; nearly all were well received and went on to sell millions more. Soon Swatch was producing chronographs and even non-quartz models. Designers such as Vivienne Westwood and Studio Azzurro created models, as did Yoko Ono, Micha Klein, Victor Vasarely, Kiki Picasso, Keith Haring, Irit Batsry, and Pedro Almodóvar.

By the mid-1990s the watches were being made in materials other than plastic; some now came in steel, aluminum, and in interesting metal combinations.

Swatch continued to experiment in the late 1990s and early 2000s with such models as Swatch Beat, which divided the day in 1,000 "beats" instead of hours, minutes, and seconds; Swatch Access, containing an antenna and a microchip that allowed it to serve as ski-lift tickets or company time cards; and Swatch Paparazzi, a sort of early predecessor to the smartwatch that could deliver news and weather reports to your wrist. In most cases, these proved to be fads more than long term innovations and successes.

In 2013, however, Swatch released the Sistem51, the first ever mechanical watch made entirely by machine. The complete opposite of the precious, handmade objects that typify the contemporary Swiss watch industry, the Sistem51 is comprised of 51 components, most of which are plastic, all held together by a single central screw. The number 51 is a nod to the number of components in the original Swatch quartz movement from 1983.

Today Swatch sells tens of millions watches a year, constantly introducing new models and designs. They have become collectible in their own right, with special examples fetching higher and higher prices each year.

This now-huge company has a tortuous history, beginning with the amalgamation of two

groups of Swiss companies — SSIH, founded in 1930 with the union of Omega and Tissot, and ASUAG (Allgemeine Schweizerische Uhrenindustrie AG), founded in 1931. SSIH was formed because so many Swiss companies were suffering during the Depression, and unification seemed the best antidote to bankruptcy. Slowly SSIH managed to take over several brands that might otherwise have gone under, and the amalgamation prospered.

ASUAG, on the other hand, was created to develop and promote the Swiss watch industry; it was composed mostly of movement companies and other behind-the-scenes firms. Then, when both unions faced trouble in the 1970s during the quartz scare, the company asked Nicolas Hayek (1928–2010), who would go on to become chairman of the board and chief executive officer of Swatch, for advice; he recommended the companies merge and create a low-cost product to compete with the Japanese models. In 1983 ASUAG and SSIH became ASUAG-SSIH, which was later shortened to SMH; in 1998 it was renamed the Swatch Group. Among the company's holdings are the brands Breguet, Blancpain, Glashütte Original, Jaquet Droz, Hamilton, Harry Winston, Longines, Omega, Rado, and Tissot. The Swatch Group sells more watches annually than any other Swiss watchmaker, with Swatch itself making up the lion's share.

SWATCH SISTEM51 SISTEM CHIC, 2017, plastic, self-winding mechanical movement

SWATCH STANDARD GENTS GN701, 1983, plastic, quartz movement with day and date

SWATCH SPECIAL KIKI, 1985, plastic, quartz movement; designed by Kiki Picasso

MODÈLE AVEC PERSONNAGES, 1985, plastic, quartz movement; designed by Keith Haring

SWATCH POP JET BLACK, 1986, plastic, quartz movement

SWATCH SPECIAL VERDU(H)RA, 1991, plastic, quartz movement; designed by Alfred Hofkunst

SWATCH SPECIAL ORB, 1993, plastic, quartz movement; designed by Vivienne Westwood

SWATCH HELMET NEWTON, 2001, plastic, quartz movement

SWATCH POP HOT STUFF, 1995, black, quartz movement

SWATCH SKIN SWEET PLANET, 2004, plastic, quartz movement

SWATCH TOUCH BUNNY-SUTRA, 2004, plastic, quartz movement with erotic game function

SWATCH BEAT PLASTIC NET-TIME, 1999, plastic, quartz movement with chronograph, date, alarm, and two time zones

SWATCH SPECIAL PLUME DE FETE, 2001, plastic, quartz movement

SWATCH SKIN SKINNOIR, 2017, plastic, quartz movement

SWATCH POP POPTASTIC, 2017, plastic, quartz movement

SWATCH SISTEM51 SISTEM CHIC, 2017, plastic, self-winding mechanical movement (reverse, with movement visible)

SWATCH SQUARE TYPICAL SQUARE, 2000, plastic, quartz movement

SWATCH IRONY BLACK SCEPTRE, 2002, stainless steel, quartz movement with date

SWATCH IRONY SCUBA, 1998, aluminum, quartz movement; water-resistant to 200 meters

SWATCH DIAPHANE ONE – VENDÔME, 2001, translucent plastic, aluminium, diamond, sapphire, and ruby, mechanical movement with revolving escapement

SWATCH TRESOR MAGIQUE, 1993, platinum, self-winding mechanical movement

SWATCH BEAT ALUMEDIUM DOUBLE DOT, 2001, quartz movement with chronograph, date, alarm, and two time zones; water-resistant to 100 meters

SWATCH SKYRIDER, 2002, plastic, quartz movement with chronograph and date

SWATCH BEAT PAPARAZZI URBAN NEWS CAB, 2004, quartz movement with chronograph, date, alarm, and two time zones

SWATCH SKINCHRONO ON THE ROAD, 2004, plastic, quartz movement with chronograph

SWATCH CHRONO CLASSIC BROWN, 1990, plastic, quartz movement with chronograph

SWATCH IRONY HIGH TAIL, 1996, aluminum, quartz movement with chronograph

TAG Heuer

When it comes to chronographs, few brands can equal TAG Heuer.

Founder Edouard Heuer (1840–1892) was an innovator and inventor, and the company (which started around 1860) continued his legacy for more than a century, creating excellent (often custom-made) timepieces for professionals. In 1916, for instance, the company created the Microsplit, a stopwatch that was able to time events to a hundredth of a second. The official timekeeper of several Olympic Games (before Omega stepped in as an official sponsor), Heuer profited greatly from its line of stopwatches and other racing-related timepieces.

Through the 1960s and 1970s, Heuer continued to innovate, finding successes with the Carrera line of hand-wound chronographs, the Autavia line of (mostly) automatic chronographs, and eventually quartz times that combined analog and digital displays on a single dial. Heuers from this era are extremely collectible and each year the record prices paid for top examples increase dramatically.

However, in the late 1970s, the company faltered. It had already merged with Leonidas, another Swiss company, and then was sold to Lemania, at that time a division of Piaget; Lemania helped reorganize the company, but soon sold it to the Techniques d'Avant Garde (TAG) Group, a private holding company based in Luxembourg — and thus its new name, TAG Heuer. Since 1999 the company has been owned by LVMH.

Although the company has produced many well-known models, its most famous is the square Monaco chronograph, worn by actor Steve McQueen in the 1971 film *Le Mans*. The watch has been reissued countless times and is still a bestseller for the company. Likewise, the contemporary iterations of the Carrera chronograph — now automatic and much larger than their predecessors — are a cornerstone of TAG Heuer's portfolio and still share many design traits with the 1960s originals.

While its more consumer-friendly offerings get the most attention, TAG Heuer has also created some extremely inventive concept watches in recent years, including a few with belt-driven mechanical movements, a chronograph that uses magnetic oscillators instead of mechanical balance springs to keep time, and a chronograph that can measure down to one two-thousandth of a second, all under the leadership of research and development director Guy Semon, a former test pilot and doctor of physics and engineering.

In 2015, TAG Heuer became the first Swiss luxury watch brand to introduce a smartwatch, the TAG Heuer Connected Smartwatch, created in partnership with Google and Intel. Since its introduction, it has been a bestseller for the brand, and when the technology becomes outdated, customers can pay a fee to exchange it with TAG Heuer for a mechanical watch.

HEUER CARRERA REFERENCE 2447 SN, 1970, stainless steel, hand-wound mechanical movement with chronograph

HEUER CARRERA REFERENCE 1158CHN, 1975, yellow gold, self-winding mechanical movement with chronograph and date

TAG HEUER CARRERA CALIBRE HEUER 01, 2016, stainless steel and ceramic, self-winding skeletonized mechanical movement with chronograph and date

As interest in vintage Heuer watches has grown over the last few years, TAG Heuer has found great success through re-issuing and re-interpreting classic models from its archive, including the Carrera, Monaco, and Autavia. These watches can be identified through the use of the old “Heuer” logo on the dials.

TAG HEUER CARRERA CALIBRE 18, 2015, stainless steel, self-winding mechanical movement with chronograph and date

TAG HEUER MONACO CALIBRE 11, 2015, stainless steel, self-winding mechanical movement with chronograph and date

TAG HEUER MONZA CALIBRE 17, 2016, stainless steel, self-winding mechanical movement with chronograph and date

HEUER AUTAVIA REFERENCE 2466 "FIRST EXECUTION," 1962, stainless steel, hand-wound mechanical movement with chronograph

HEUER AUTAVIA REFERENCE 11630, 1970s, stainless steel, self-winding mechanical movement with chronograph and date

TAG HEUER AUTAVIA CALIBRE HEUER 02, 2017, stainless steel, self-winding mechanical movement with chronograph and date

TAG HEUER CONNECTED, 2015, titanium and ceramic, smartwatch powered by Android Wear

TAG HEUER MIKROPENDULUMS, 2013, chrome and cobalt alloy, hand-wound mechanical movement with two magnetic tourbillons, power reserve, and chronograph accurate to 1/100th of a second

TAG HEUER MONACO V4, 2012, titanium, self-winding mechanical movement with proprietary belt drive system

Tissot

Tissot was founded in 1853 in Le Locle by Charles-Félicien Tissot (1804–1873) and his son Charles-Émile Tissot (1830–1910). The two made a commitment early to foreign markets, especially the United States and Russia, with the younger Tissot heading off to the Russian Empire in 1858. At the time, a company needed permission from the Czar himself to sell watches in Russia, and Tissot was one of just a handful of makers plying its wares there during the closing decades of the nineteenth century.

The company began to venture into wristwatches relatively early, making them as early as the 1910s. The so-called "Banana" watch, with its elongated rectangular case in yellow gold and exploded Arabic numerals, was the company's first popular men's wristwatch, finding success in Russia on the eve of the October Revolution.

In 1917 Tissot set up its own *manufacture* for making wristwatch movements in-house in Le Locle. This allowed the company to vertically integrate, reduce costs, and offer watches at more competitive prices, all of which are still important to Tissot today.

During the difficult inter-war years, Tissot merged with Omega to form the SSIH (a forerunner to the modern Swatch Group, of which Tissot is now a part). In the ensuing decades, Tissot went on to produce many of its best-regarded watches, including the Antimagnétique (the world's first anti-magnetic watch), the Navigator world time watch, and a plethora of chronographs that are favorites of vintage collectors.

As quartz movements swept through Switzerland in the 1970s and 1980s, Tissot embraced change, and began making fashionable watches with the new electronic movements inside. The company was not shy about experimenting and was the first to make watches in plastic, stone, mother of pearl, and wood.

Today, Tissot makes both mechanical watches and quartz watches, with its T-Touch series of hybrid digital/analog watches the company's best-seller. In 2017, Tissot introduced the Everytime collection, which uses movements made almost entirely by machine in order to offer a Swiss automatic watch at an especially accessible price.

TISSOT BALLADE POWER-MATIC 80 COSC, 2017, stainless steel, self-winding mechanical movement with date, silicon hairspring, and chronometer certification

TISSOT HERITAGE 1948 CHRONOGRAPH, 2017, stainless steel, self-winding mechanical movement with chronograph and date

TISSOT HERITAGE NAVIGATOR 160TH ANNIVERSARY, 2013, stainless steel, self-winding mechanical movement with world time function

TISSOT CHRONOGRAPH, c. 1940, stainless steel, hand-wound mechanical movement with monopusher chronograph

TISSOT NAVIGATOR, c. 1950, yellow gold and stainless steel, hand-wound mechanical movement with world time function

TISSOT CHRONOGRAPH CALIBER 33.3, 1940s, stainless steel, hand-wound mechanical movement with chronograph

TISSOT DRESS WATCH, 1950s, stainless steel, hand-wound mechanical movement

Tudor

Tudor is the sister brand of Rolex. Founded in 1946, four decades after its older sibling began making watches, the company has made a name for itself independent of its association with Rolex, and in recent years has become an enormously popular brand, especially among new collectors seeing a well-built watch at a more accessible price.

From the 1950s through the 1970s, the bulk of Tudor's watches were dive watches styled similarly to those of Rolex, with rotating bezels, dark black dials with large luminous markers, and durable bracelets. During this era, many of the external components such as cases, bracelets, and crowns, actually bore Rolex logos, as the main difference between a Tudor Submariner and Rolex Submariner was the movement inside — Tudor watches used movements from outside suppliers, while Rolex watches contained Rolex-made movements. These dive watches would eventually gain the so-called "Snowflake" hour hand, with its wide, squared-off tip, a feature unique to Tudor. The French Marine Nationale used these for tactical divers; those military-issued watches are now highly collectible.

Two watches during this period were 100 percent Tudor: the Advisor alarm watch and the Monte Carlo chronograph. The former is a complication that still, to this day, Rolex has never employed, and the complication module for the Advisor has always been built in-house by Tudor. The latter were brightly colored chronographs with blue, orange, and gray dials meant for auto racing. These are the inspiration for today's Heritage Chronograph collection, which helped kick-start the popularity of vintage-styled watches in recent years.

In 2015, Tudor introduced the North Flag, a sport watch containing the brand's very first in-house movement, which featured a silicon hairspring and COSC chronometer certification. Over the years, in-house movements have made their way into other Tudor models.

Experimentation with different materials is another way Tudor differentiates itself. The Pelagos dive watch uses a titanium case and bracelet, along with a matte ceramic bezel, to reduce weight without compromising on robustness, and the Black Bay Bronze has a case made of a bronze and aluminum alloy that will not corrode excessively with exposure to salt water.

In 2017, Tudor added an in-house chronograph movement to its line up as well, the caliber MT5813, which it manufactures in partnership with Breitling. In exchange for the chronograph know-how, Tudor began supplying ébauche versions of its time-only movements to Breitling, an arrangement reminiscent of the old days of watchmaking, when manufacturers would often work together and supply one another with components.

Tudor withdrew from the United States market for strategic reasons in 1996, only returning in 2013. Since then, the brand has become extremely popular, largely on the merits of its Heritage collection.

TUDOR “BIG BLOCK” CHRONOGRAPH, c. 1992, stainless steel, self-winding mechanical movement with chronograph and date

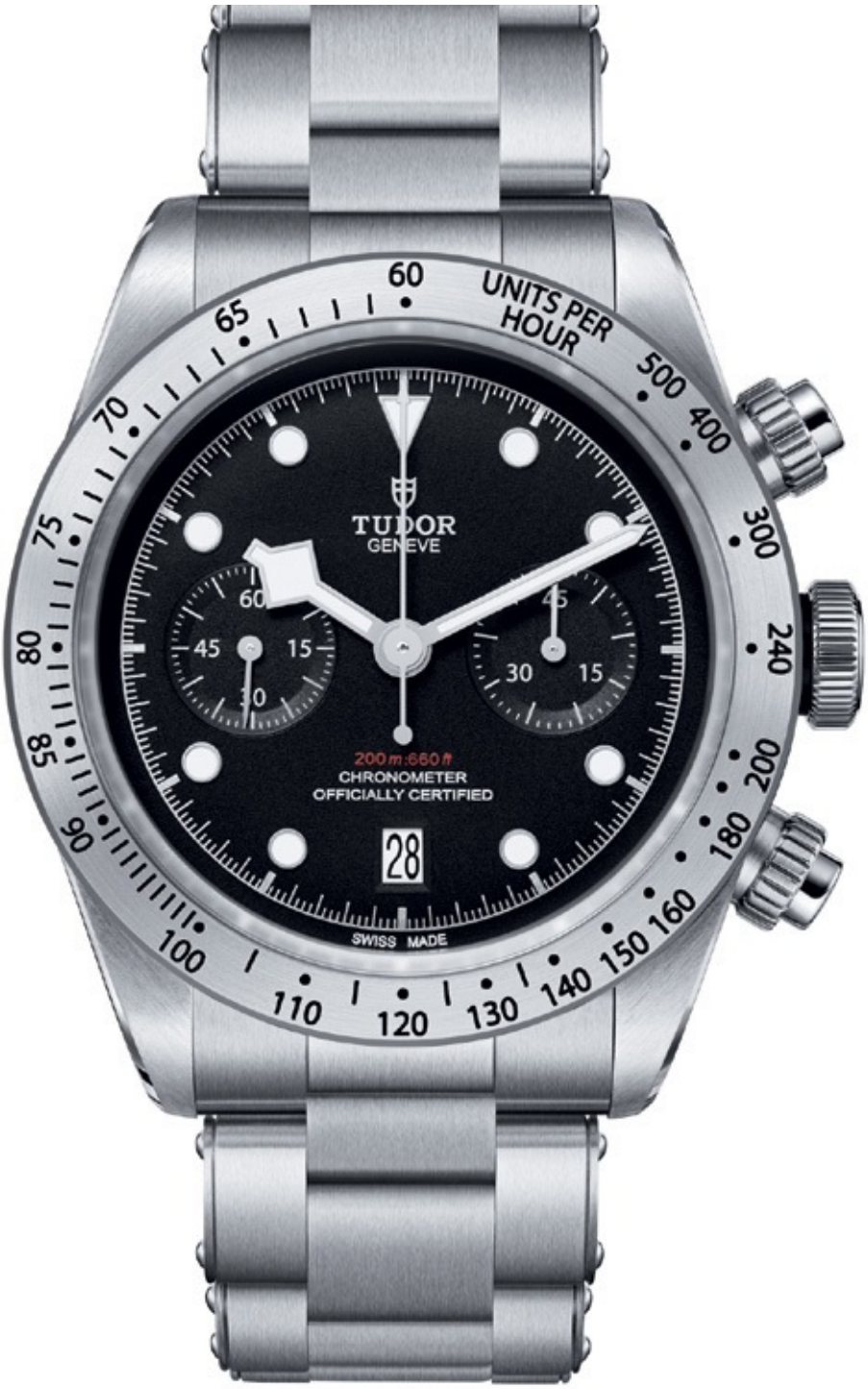
TUDOR OYSTER PRINCE "TUXEDO," 1950s, stainless steel, self-winding mechanical movement

TUDOR ADVISOR REFERENCE 7926, c. 1964, stainless steel, hand-wound mechanical movement with in-house alarm complication

TUDOR “SNOWFLAKE” SUBMARINER REFERENCE 9411/0, c. 1976, stainless steel, self-winding mechanical movement with date

TUDOR “HOME PLATE” CHRONOGRAPH REFERENCE 7032, c. 1971, stainless steel, hand-wound mechanical movement with chronograph and date

TUDOR HERITAGE BLACK BAY, 2016, stainless steel, self-winding mechanical movement



TUDOR OYSTER PRINCE SUBMARINER REFERENCE 7924, c. 1959, stainless steel, self-winding mechanical movement, gilt dial, and big crown

TUDOR HERITAGE BLACK BAY CHRONOGRAPH, 2017, stainless steel, self-winding mechanical movement with chronograph and date

TUDOR PELAGOS LHD, 2016, titanium, self-winding mechanical movement

TUDOR HERTIAGE BLACK BAY BRONZE, 2016, bronze, self-winding mechanical movement

Ulysse Nardin

Watchmaker Ulysse Nardin (1823–1876) founded his company in 1846. Sixteen years later, at the London International Exhibition, Nardin received the Prize Medal (the highest honor) in the category of "complicated watches, pocket chronometers." This award placed the watchmaker in the lead among pocket chronometer makers; his company continued to win many awards, even after the senior Nardin died and his son, Paul-David, took over. In 1915, at the Naval Observatory in Washington, D.C., Ulysse Nardin took first place among sixty marine chronometers; seven years later, at the same trials, Ulysse Nardin marine chronometers again captured first place — and second and third as well.

Like so many other Swiss companies, Ulysse Nardin struggled during the 1970s; in 1983 it was rescued by former Jaeger-LeCoultre executive Rolf W. Schnyder.

Although its output has included chronometers, chronographs, and large-date watches, Ulysse Nardin is best known for its more unusual timepieces that reflect the astronomical interests of Dr. Ludwig Oechslin, the expert watchmaker whom Schnyder brought on board to help revitalize the company.

From 1985 to 1992, Oechslin worked to create a now-legendary series of watches called the Trilogy of Time; these watches include the Tellurium Johannes Kepler, the Astrolabium Galileo Galilei, and the Planetarium Copernicus, and each goes far beyond telling the time to also indicate the positions of heavenly bodies in a poetic and beautiful manner. These three watches still serve as the foundations for many contemporary Ulysse Nardin watches in some form or another.

A more recent marvel is the Freak — also designed by Oechslin — which turns conventional movement wisdom on its head. The watch looks like no other. Essentially, it has neither hands nor dial nor crown, with the entire movement rotating inside the case to display the time, and it uses an escapement that doesn't need lubrication. Years of iterations on the Freak have culminated in the Freak Inno-Vision 2, a concept watch that uses a constant force escapement and cutting-edge materials to deliver the best performance possible.

In 2014, Ulysse Nardin was acquired by Italian luxury conglomerate Kering Group (which also owns fashion brands such as Gucci and Saint Laurent), which has made a distinct effort to simplify the brand's offerings and streamline manufacturing processes. The result is a more cohesive strategy that focuses on developing the company's unique offerings (such as the Freak and the Marine collections) instead of trying to make a little bit of everything.

ULYSSE NARDIN CLASSIC PERPETUAL LUDWIG, 2017, stainless steel, self-winding mechanical movement with perpetual calendar

ULYSSE NARDIN CLASSICO MANUFACTURE GRAND FEU, 2017, stainless steel with enamel dial, self-winding mechanical movement with date

ULYSSE NARDIN CLASSIC SONATA, 2017, rose gold, self-winding mechanical movement with cathedral gong alarm, second time zone, and date

ULYSSE NARDIN TELLURIUM J. KEPLER, 1992, platinum, self-winding mechanical movement with perpetual calendar, showing the rotation of the earth, sunrise and sunset, equinoxes, and eclipses of the sun and moon

ULYSSE NARDIN PLANETARIUM COPERNICUS, 1988, yellow gold, self-winding mechanical movement with perpetual calendar indicating months, the signs of the zodiac, and the astronomical positions of the planets in relation to the sun and the earth

ULYSSE NARDIN ASTROLABIUM G. GALILEI, 1985, white and yellow gold, self-winding mechanical movement with perpetual calendar and astrolabe indicating the position of the sun, the moon, and certain stars; sunrise and sunset; moonphase, moonrise, and moonset; and eclipses of the sun and moon

The company’s gift for complicated astronomical displays are evidenced in Ludwig Oechslin’s Trilogy of Time, consisting of homages to Copernicus, Kepler, and Galileo.

ULYSSE NARDIN, 1950s, stainless steel, mechanical movement with chronograph and triple-date calendar

ULYSSE NARDIN, 1930s, yellow gold, mechanical movement with chronograph

ULYSSE NARDIN, 1930s, yellow gold, mechanical movement with chronograph

ULYSSE NARDIN CLASSIC SONATA, 2017, stainless steel, self-winding mechanical movement with cathedral gong alarm, second time zone, and date

ULYSSE NARDIN THE FREAK DIAVOLO, 2011, white gold, hand-wound mechanical movement with tourbillon mounted on a one-hour carriage and silicon escapement

ULYSSE NARDIN PERPETUAL CALENDAR GMT, c. 2000, yellow gold, self-winding mechanical movement with full perpetual calendar and second time zone function

Universal Genève

One of the all-time great watch companies, this older concern, founded in 1894, is known for its superb Compax chronographs and Tri-Compax calendar chronographs of the 1940s and 1950s. Prices for these watches have risen dramatically over the last decade, both privately and at auction, in part because the company was one of the most detail oriented and technologically advanced of its time, making their watches especially appealing to knowledgeable collectors.

Another great Universal watch was the Polerouter; it utilized the company's highly praised micro-rotor movements, the first to feature the inset winding mechanisms. Designed in 1954 by a young Gérald Genta, it was the anti-magnetic watch of choice for Scandinavian Airlines (SAS) pilots flying over the North Pole on their route between California and Scandinavia.

In the late 1940s and 1950s, Universal Genève was one of the best-selling Swiss watch brands. During that period it was also the only other watch brand sold by the Henri Stern Watch Agency, Patek Philippe's American subsidiary in New York City.

The company faltered in later decades as quartz watches became popular and accessible. In the 1970s, the company was bought by Bulova, and in 1986 it ended up in the hands of Stelux, a Hong Kong–based real estate and investment group. Today it is still technically in operation, but it is merely a shadow of its former self.

UNIVERSAL GENÈVE TRI-COMPAX REFERENCE 181102, 1970s, yellow gold, hand-wound mechanical movement with chronograph, month, day, date, and moonphase

UNIVERSAL GENÈVE TRI-COMPAX, c. 1945, stainless steel, hand-wound mechanical movement with chronograph, month, day, date, and moonphase

UNIVERSAL GENÈVE UNI-COMPAX, c. 1960, yellow gold, hand-wound mechanical movement with chronograph

UNIVERSAL GENÈVE POLEROUTER DATE, 1960s, stainless steel, self-winding mechanical movement with micro-rotor, date and anti-magnetic protection

UNIVERSAL GENÈVE COMPAX, 1940s, yellow gold, hand-wound mechanical movement with chronograph

UNIVERSAL GENÈVE TRI-COMPAX, 1960s, stainless steel, hand-wound mechanical movement with chronograph, month, day, date, and moonphase

The term Tri-Compax, now used generally by collectors to describe watch faces with three subdials, was originated by Universal for its line of chronographs in the mid-twentieth century.

UNIVERSAL GENÈVE AERO-COMPAX, 1945, stainless steel, hand-wound mechanical movement with chronograph and time reminder display

UNIVERSAL GENÈVE TRI-COMPAX REFERENCE 881101/02, 1960s, stainless steel, hand-wound mechanical movement with chronograph, month, day, date, and moonphase

UNIVERSAL GENÈVE MILITARY RATTRAPANTE CHRONOGRAPH, 1950s, stainless steel, hand-wound mechanical movement with split-seconds chronograph and 24-hour dial

Urwerk

Founded in 1997 by watchmaker Felix Baumgartner and designer Martin Frei, Urwerk was at the forefront of the modern *avant garde* watchmaking movement. From the beginning the founders did not want to make watches that looked like traditional timepieces. Urwerk's first watch, the UR-101, had no hands and displayed the time by having a digital readout of the hour traverse a curved path with the minutes marked along the edge. It resembled a spaceship more than a wristwatch.

However, in 2003 Urwerk introduced the UR-103, its time-telling system that became the company's signature piece. A centrally-mounted carousel carries discs marked with the hours and the entire mechanism rotates to display the times — these discs align the given hour with a minutes scale at the bottom of the watch. The watches' mechanics and aesthetics are completely intertwined.

In 2013, Urwerk introduce the Electro Mechanical Control (EMC), a fully mechanical watch with a built-in electronic timing monitor allowing the wearer to turn a crank to power the monitor, press a button, and have the watch give a readout of its own timing performance, telling the wearer whether the watch is running slow, fast, or accurately.

The company, still independently owned, continues to be a leader in the world of *haute horlogerie* and despite being small, has had an outsized impact on the watchmaking landscape at large.

URWERK UR-101/40, 1999, white gold, self-winding mechanical movement with wandering satellite hours display

URWERK UR-105 M IRON KNIGHT, c. 2014, titanium and stainless steel, hand-wound mechanical movement with rotating satellite hour and fixed minutes track

URWERK UR-210, c. 2012, titanium, hand-wound mechanical movement with three-dimensional rotating hour display, retrograde minute hand, power reserve, and winding efficiency indicator

URWERK UR-110, 2011, titanium and rose gold, self-winding mechanical movement with revolving satellite hour, fixed minutes track, day/night indicator, and “oil change” indicator for servicing

URWERK EMC, 2013, stainless steel and titanium, self-winding mechanical movement with power reserve, adjustable winding system, and a built-in electronic timing monitor for calculating the watch's accuracy

URWERK UR-105 CT STREAMLINER, 2017, titanium and stainless steel, self-winding mechanical movement with rotating satellite hour, fixed minutes track, and adjustable winding mechanism

Vacheron Constantin

Founded by watchmaker Jean-Marc Vacheron (1731–1805) in 1755, this company is the oldest continuously active watch manufacturer. Vacheron's reputation quickly grew, and by the 1770s he was making watches for Europe's royal courts. In 1785, Vacheron's son Abraham took over the company, which was prospering despite the radical shifts in French politics.

By the time Napoleon had been vanquished, Vacheron's grandson, Jaques-Barthélemy, was in charge; in need of capital, he asked François Constantin, the son of a wealthy grain merchant, to join the firm in 1819, hence its new name, Vacheron & Constantin.

In 1839, Georges-Auguste Leschot joined the company. Leschot had been experimenting with machines that made interchangeable parts, leading to serial production of watch components, then a revolutionary concept that was ridiculed by the watchmaking establishment. At the time, watch parts were generally rough cut, formed, and finished by hand; in essence, every piece was custom-made. Because of Leschot's cost-saving inventions, including a turning and drilling machine that could consistently drill holes in exactly the same position, Vacheron & Constantin was soon able to sell high-quality watches at a lower price than that of other comparable brands. Karl Marx refers to Vacheron & Constantin in his treatise *Das Kapital*, noting its successful introduction of machines into the watchmaking process.

Several Vacheron & Constantin heirs took over the company following François Constantin's death; these included two women, Laure Vacheron-Pernessin and Catherine-Étienne Vacheron, the eighty-eight-year-old widow of Jaques-Barthélemy Vacheron, who led the company into the twentieth century.

In 1877, the name of the firm was officially registered as "Vacheron & Constantin, Fabricants, Genève"; three years later, the company began using the Maltese cross as its trademark. Then, in 1887, following the death of the two Vacheron women, the firm became a public company. It suffered its share of ups and downs, yet managed to produce some remarkable pocket watches, including a few ultra-complicated pieces for special clients during the early years of the twentieth century.

In 1936, Charles Constantin became the company's president, marking the first time that a Constantin had led the company since the mid-1850s. But the onset of World War II devastated sales, and in 1940 Georges Ketterer acquired a majority ownership position. He proved to be a solid leader, and the company prospered once more. In 1987, following Ketterer's death, the company once again changed hands. Today it is owned by Richemont and known as Vacheron Constantin (having dropped the ampersand in the late 1970s).

Vacheron Constantin's high-end watches are considered some of the best in the business, produced with tremendous craftsmanship and care. They are one of the few companies to employ artisans such as enamel artists, hand-engravers, and gem-setters in-house rather than using outside contractors for jobs like this. In particular, Vacheron Constantin's ultra-slim minute repeaters and astronomical complications are highly revered.

The Reference 57260 pocket watch, unveiled in 2015, is the most complicated watch ever made, with 57 total complications, including grand and petit sonnerie, perpetual Hebraic

calendar, three-axis tourbillon, the date of Yom Kippur, and split-seconds chronograph. It weighs over two pounds, is nearly ten centimeters across and over five centimeters thick, and is a totem of Vacheron Constantin’s technical and artistic achievements.

VACHERON CONSTANTIN OVERSEAS ULTRA-THIN, 2016, white gold, self-winding mechanical movement, integrated white gold bracelet

VACHERON CONSTANTIN HISTORIQUES TRIPLE CALENDRIER 1942, 2017, stainless steel, hand-wound mechanical movement with month, day, and dates

VACHERON CONSTANTIN LES CABINOTIERS CELESTIA ASTRONOMICAL GRAND COMPLICATION 3600, 2017, white gold, hand-wound mechanical movement with sixteen astronomical complications

VACHERON CONSTANTIN MERCATOR REFERENCE 43050, 1990s, yellow gold with yellow gold dial representing the continents of Europe, Africa, Australia, and Asia, self-winding mechanical movement

VACHERON CONSTANTIN MERCATOR REFERENCE 43050, 1998, yellow gold with polychrome cloisonné enamel dial representing the Chinese zodiac, self-winding mechanical movement

Only 36 examples of the original Cornes de Vache were produced in the 1950s, but in 2015 Vacheron Constantin revived the model as part of the Historiques collection, updating it with a larger case and slightly more modern styling.

VACHERON CONSTANTIN CORNES DE VACHE REFERENCE 6087, 1957, pink gold, mechanical movement with chronograph

VACHERON CONSTANTIN HISTORIQUES CORNES DE VACHE 1955, 2015, rose gold, hand-wound mechanical movement with chronograph

VACHERON CONSTANTIN FIFTYSIX SELF-WINDING, 2018, stainless steel, self-winding mechanical movement with date

VACHERON CONSTANTIN FIFTYSIX DAY-DATE, 2018, rose gold, self-winding mechanical movement with day, date, and power reserve

VACHERON CONSTANTIN HARMONY CHRONOGRAPH, 2015, rose gold, hand-wound mechanical movement with monopusher chronograph, power reserve, and hand engraving

VACHERON CONSTANTIN MALTE PERPETUAL CALENDAR MINUTE REPEATER REFERENCE 30040, c. 2008, rose gold, hand-wound mechanical movement with minute repeater, perpetual calendar, and moonphase

VACHERON CONSTANTIN PATRIMONY TRADITIONELLE WORLD TIME, 2012, rose gold, hand-wound mechanical movement with world time complication

Among its many strengths, Vacheron Constantin is a master at skeletonization, with unparalleled craftsmanship and delicately filigreed movements for all manner of high complications.

VACHERON CONSTANTIN REFERENCE 33115, 1997, white gold, hand-wound skeletonized mechanical movement with ornate hand engraving

VACHERON CONSTANTIN TOURBILLON MALTE SQUELETTE REFERENCE 30066-67/1, c. 2000, pink gold, mechanical movement with tourbillon, date, and power reserve

VACHERON CONSTANTIN, c. 2000, yellow gold, self-winding mechanical movement with perpetual calendar and moonphase

In 2015, Vacheron Constantin unveiled the most complicated watch ever made, the Reference 57260 pocket watch. The watch is named for its 57 complications and the brand's 260th anniversary, the occasion for its creation. Some of its complications are world-firsts as well, including a double retrograde split-seconds chronograph and a calendar that calculates the day of Yom Kippur.

VACHERON CONSTANTIN REFERENCE 57260, 2015, white gold, hand-wound mechanical movement with 57 complications.

Zenith

Zenith is one of the great manufacturers, though it tends to be underappreciated. The company's watches, which range from moderately priced time-only pieces to extravagant complications with prices to match, are mostly equipped with movements produced by Zenith itself, and have been for more than half a century.

The brand was founded in 1865 by Georges Favre-Jacot (1843–1907), and was almost immediately successful, winning many awards, especially for its large movement dubbed the Zenith; this name was eventually adopted by the company as its own.

Since 1903, Zenith has been awarded more than fifteen hundred top observatory prizes and medals in chronometry, placing it among the brands with the most awards for precision and reliability.

Zenith was almost entirely unknown in the United States for many years because it was unable to sell its watches here due to a trademark dispute with the American Zenith Radio Corporation. A resolution seemed imminent when the latter bought the former from the Movado group in the 1970s. The deal didn't turn out well; Swiss manufacturers couldn't compete with Japanese companies when it came to inexpensive quartz watches, and by 1983 the company had a new owner, Paul Castella, who reinvigorated the brand, returning it to its mechanical roots before selling it to the LVMH group in 1999.

While today the brand has many models, at its core Zenith is all about the El Primero chronograph movement. The El Primero was the very first automatic chronograph, introduced in 1969 (the same year that saw Heuer's Caliber 11 and Seiko's 6139, two other automatic chronographs), and to this day it is widely considered one of the most important movements in horological history.

For a period in the 1970s and early 1980s, under the Zenith Radio Corporation's ownership, however, Zenith focused on developing quartz movements and the El Primero movement completely disappeared. Luckily, a watch-maker by the name of Charles Vermot had hidden plans and equipment for making the El Primero in the attic of the old *manufacture* — against corporate orders, no less — otherwise the movement might have been lost forever. Production of the caliber resumed in the mid-1980s, when Rolex commissioned Zenith to provide El Primero movements for its vaunted Daytona, a partnership that would last just a few years.

Now under the leadership of former Blancpain chief Jean-Claude Biver, Zenith continues to innovate and experiment with high-speed movements. In September 2017, the firm unveiled the Defy Lab, a concept watch with no traditional balance or escapement at all. Instead, a complex silicon blade spring pulses at fifteen hertz and provides performance accurate to ± 0.5 seconds every two days.

ZENITH HERITAGE 146, 2017, stainless steel, self-winding mechanical movement with chronograph

ZENITH TIPO CP-2 “A. CAIRELLI,” c. 1960, stainless steel, hand-wound mechanical movement with chronograph

ZENITH PILOT TYPE 20 EXTRA SPECIAL, 2017, stainless steel, self-winding mechanical movement

ZENITH EL PRIMERO REFERENCE A386, 1971, stainless steel, self-winding mechanical movement with high-beat escapement, chronograph, and date

ZENITH EL PRIMERO LIGHTWEIGHT, 2013, ceramised aluminum and carbon fiber, self-winding mechanical movement with high-speed chronograph accurate to 1/10th of a second, and date

ZENITH ELITE CHRONOGRAPH CLASSIC, 2015, stainless steel, self-winding mechanical movement with chronograph

ZENITH DEFY LAB, 2017, Aeronith composite, self-winding mechanical movement with proprietary high-speed blade spring oscillator

ZENITH CHRONOGRAPH 156H, 1950s, rose gold, hand-wound mechanical movement with chronograph

12
CHRONOMÈTRE
OMEGA
9
3

BUYING, COLLECTING, MAINTAINING

In the opening to his novel *Anna Karenina,* Tolstoy famously remarked that all happy families are alike. Nearly all new watch lovers are alike, too, when they start collecting. Here's what they have in common: They make mistakes.

It's almost impossible not to slip up when you start off — even the most sophisticated connoisseurs will tell you how they overpaid wildly when making their first purchase, or how their first expensive watch lost fifteen minutes a day, or how that wonderful piece that looked so beautiful online turned out to be an ugly mess when it arrived at their doorstep.

Knowing how to buy watches intelligently takes time, but luckily, mistakes ultimately can be the best teacher.

One watch lover says that when he began his collection he felt Baume & Mercier was the only brand that spoke to him; soon he owned several. Then he decided he preferred Omega and sold his Baume & Merciers at a large loss (having discovered he'd overpaid for them in the first place). He then bought Omegas. That love faded; he moved to Jaeger-LeCoultre, and sold the Omegas — at another loss. And now he has many JLCs, but has found other brands. He realizes that just because he falls in love with a brand today doesn't mean he'll still love it tomorrow.

Another watch lover tells how he started his collection slowly, but when he saw a beautiful Audemars Piguet at a jewelry store, he traded all his old watches for it, not realizing that the old watches were worth far more than the new Audemars Piguet. In effect, he paid twice the store's price, because he didn't understand that the dealer who traded for his watches was simply trying to make as much money as possible.

A third watch aficionado explains how his first purchase was a beautiful 1950s Vacheron Constantin, but the dial was a little soiled, so he had it refinished. He then learned that the watch was worth a great deal more money with the slightly spotty original dial than with its new, cleaned-up face. No one told him that the vintage market places a premium on original condition. The worst part was that the watch looked better with the spotty dial.

Once watch lovers begin to accumulate not just watches but also knowledge, they diverge into many camps. No longer alike, aficionados go various ways — some stick to one and only one brand, while others prefer one complication. Some buy to their heart's content; others are restrained by budget considerations. Some care only about the movement, others are interested in the dial. All in all, millions of watches are produced every year, and lying in wait for those watches are millions of different kinds of buyers.

But just as there is one thing almost all watch fans do when they start off — make mistakes — there is something else that everyone who's interested in watches should do for the rest of their watch-collecting careers: Buy intelligently. You must keep this in mind: The watch business is exactly that — a business. Yes, the industry makes beautiful pieces of art. But they

create these pieces to make a profit. Without profits there can be no craftsmanship, no movement, no dial, no watch.

Look back at the 1970s, when the quartz revolution nearly drove the mechanical watch industry out of business. Hundreds of good companies disappeared forever.

12 GREAT MODERN DRESS WATCHES

1. A. LANGE & SÖHNE SAXONIA THIN

2. CARTIER TANK LOUIS CARTIER

3. F.P. JOURNE CHRONOMÈTRE SOUVERAIN

4. GRAND SEIKO SBGW253 ANNIVERSARY EDITION

5. H. MOSER ENDEAVOUR CENTRE SECONDS

6. JAEGER-LECOULTRE MASTER CONTROL MOON

7. LAURENT FERRIER GALET MICRO-ROTOR

8. NOMOS GLASHÜTTE TANGENTE

9. PATEK PHILIPPE CALATRAVA REFERENCE 5196

10. PIAGET ALTIPLANO

11. ROLEX CELLINI MOONPHASE

12. VACHERON CONSTANTIN PATRIMONY TRADITIONNELLE

Grady Seale

Engineer
Bay Area, California, USA

When I was about eight years old, I was given a Texas Instruments LED watch that required the wearer to push a little button for it to show you the time. I adored it. But I moved on, eventually getting a Seiko watch, and then there was a long period where I stopped wearing a watch altogether.

I guess my attraction to watches never went away, and so, when I turned thirty, I decided to buy a nice one for myself. I was living in Boston at the time and walked down to a store called Alpha Omega, and purchased a two-time-zone IWC. It was an extremely meaningful purchase for me, and I still have and love the watch. For years, in fact, it was my only watch, but I did eventually start to try other things.

I initially started off mostly with sportier watches, but then I really got into the mechanics and began learning more about hand finishing and the work that goes into producing a high-end movement by hand. Brands like A. Lange & Söhne, Vacheron Constantin, Laurent Ferrier became more and more interesting to me. It’s just incredible that design, and art, and engineering can be put together to create something so spectacular.

While I admire these modern, more complicated pieces, there’s still something about a simple watch with just three hands that you can wear anywhere that impresses me. Take the Rolex Datejust for example. I recently acquired a 1965 model with a black gilt dial and it’s as beautiful as anything you could find to put it up against. Vintage Tudors are another great example: These watches were built as tools back in the 1960s and ’70s, and they still look the part today.

Being a part of the growing watch collector community is another reason why I enjoy this so much. I used to travel a lot for work, but that’s not the case anymore. Now I travel for watches — I went to Geneva last year and I’m going again next year — and I travel for the big auctions too. It makes a fun hobby an adventure as well.

Matt Fisher

Finance Executive
New Jersey, USA

I was interested in classic men's clothing before I got into watches. Back then I thought owning a quality watch was simply an accessory. But once I saw a mechanical watch movement through a sapphire caseback — it was a Maurice Lacroix Grand Guichet — everything changed and I went right down the rabbit hole.

The guy I bought that first Maurice Lacroix from ended up becoming an invaluable resource — he spent an enormous amount of time answering my questions, showing me new watches, and even explaining a bit about how the industry worked. Over the course of a few years, I spent hours and hours on the phone with this guy.

My taste has definitely changed over the last seventeen years or so. I wanted to have exposure to everything and so I purchased watches from Jaeger, IWC, Panerai, and basically anyone else you can think of — big, small, sporty, classic: I really haven't shied away from trying out new styles and brands. I see each as a learning experience.

In the mid-2000s, though, I purchased my first Patek Philippe and since then I've focused primarily on two brands: Patek Philippe and Universal Genève. There is so much that connects the two brands, historically, design-wise, and even from a production perspective. Each represents a kind of excellence, as well as a mixture of innovation and traditionalism. My collection has grown, but it has also become much more focused in this way.

I've even gotten to the point now with Universal Genève where I'm willing to take on pretty difficult restoration projects as long as the dial is good and the bones are still there. I have a watchmaker with a cache of new-old stock parts. I'll find a diamond in the rough and then I will work with him to bring it back to its former glory. I'm not making the watch brand new — I respect the original structure, I only use the appropriate components, and strive to leave its natural patina intact. Being able to bring these amazing watches back to the world has renewed my passion for the hobby.

Jonathan Hughes

Investor
London, United Kingdom

I feel like I should have a story about my father's or grandfather's watches or some other kind of familial tale, but actually no one in my family other than me seems to be even remotely interested in watches. In fact, my uncle inherited my grandfather's Rolex but when it broke he decided it would be too expensive to fix, so he threw it away.

For me, the fascination begins with engineering designed for a clear purpose. Simplicity done well is something that I like, and almost all my watches meet that criteria in some way — in fact, most of my watches show only the time.

I focus primarily on smaller, independent watchmakers. Buying watches from big luxury group brands at high-street boutiques doesn't interest me as much as meeting and working with creative people who can build interesting things, as well as getting to know independent watch brands. This way you can get both a great watch and a relationship with someone special. To me, that's what this passion is all about.

There are better known brands like MB&F, F.P. Journe, and Ressence that fall into this category, but also much smaller outfits, like husband and wife teams Craig and Rebecca Struthers in the United Kingdom and Richard and Maria Habring in Austria. The former will build you custom watches from the ground up, starting with vintage movements, while the latter create rigorously simple takes on complications like deadbeat seconds. There are also British makers, including George Daniels's apprentice Roger Smith.

The remainder of my collection is a mix of military and civilian diver watches. I think there's a bit of James Bond in almost everyone, and these watches satisfy that action personality type. I also enjoy getting into the details with the military pieces, tracking which serial numbers were issued when and learning to appreciate the little details that can tell you a lot about the life of one of these watches. I've even bought old British MOD (Maximum Operating Depth) divers off of ex-soldiers at pubs — these aren't fancy watches, but each one tells a great story.

J.P. Vicente

Marketing Director
New York City, USA

I have loved watches for as long as I can remember. My first watch was a Lanco that my mom gave to my dad when they were dating. It was passed on to me when I was seven years old. I quickly learned how to tell time and that was the start of a life-long obsession with watches.

Even though I began my watch life with mechanical pieces, I fell for quartz and digital watches when I was a teenager, especially the G-Shocks. I also had Casio game watches and one of those Texas Instruments LED watches.

It came to the point where I had a gazillion watches that I didn't wear and I realized it was time to take my collection more seriously. I believe there's a certain logic to collecting: Every collector has an obsession, every obsession has an object of desire, and every object of desire plays a role in justifying the collection itself. So the entire process of collecting something ends up being a cycle that fuels itself. Sort of like a feedback loop.

I have a particular obsession with Seiko that goes all the way back to my childhood. I now have over thirty. The company has done incredible work generating and creating a brand that has a personality of its own. The designs are not just beautiful — they're functional and meant to help the wearer in some way. This is a core feature of traditional Japanese design and it carries through in almost every watch Seiko makes.

Talking specifically about Grand Seiko, I believe there are four seminal pieces that epitomize the true spirit of the line—the first four models — and I have collected examples of each: the 3180, the 57GS, the 44GS, and the 62GS. Each presents a chapter in the story of Grand Seiko's joint pursuit of chronometry and design.

I do collect other watches as well, such as vintage and vintage-inspired divers and chronographs from brands like Doxa, Omega, and Breitling, and also modern Rolex sport watches. All the pieces I own tend to have classic designs — that's a feature that's very important to me.

10 MODELS YOU NEED TO KNOW

1. AUDEMARS PIGUET ROYAL OAK

2. CARTIER TANK

3. IWC PORTUGIESER

4. JAEGER-LECOULTRE REVERSO

5. MOVADO MUSEUM WATCH

6. OMEGA SPEEDMASTER

7. PATEK PHILIPPE CALATRAVA

8. ROLEX SUBMARINER

9. TAG HEUER MONACO

10. ZENITH EL PRIMERO

The survivors and the new companies that arose to take advantage of the resurgent love for mechanical watches learned a lesson. Without the ability to make money from whatever they do, they cease to exist.

The same is true for retailers. A retail store is also a business. Watch sellers with integrity and knowledge exist; it's quite possible to find someone who combines business acumen with integrity. But there are also many retailers for whom getting as much money as possible for a watch is their only consideration.

All that said, accumulating and maintaining a watch collection can be a source of great pleasure. Buying a new watch, or selling an old watch, can feel as emotional as making a new friend or losing an old one. Many watch collectors keep photographs of all their watches and pass them around the way others might pass around pictures of their children. Some will speak mournfully of a great watch they sold some years before, and what a mistake it was, and how much they miss it. Others will talk about a new watch they just bought and the enormous joy it has brought to their lives.

(And yes, there are others for whom the emotional highs and lows aren't quite as intense. But collecting watches, like any other hobby, often leads to memorable moments.)

Before you start building a collection, take a deep breath. Don't commit to any watch until you're truly ready. It's normal to want to buy everything you see, the moment you see it. In the beginning, many watches will seem interesting and unusual — but they may not be. For example, you may think a complication you've never seen before, such as jumping hours, is completely novel, only to discover that many watch brands make a jump-hour watch (and some do it far better than others). Or you may find your first flyback chronograph and want to buy it before realizing that it's a fairly common complication and you may have purchased an inferior

model.

Be patient. Very few people are so sophisticated that they can move from window-shopper to buyer in one step. Auctions are for the well-versed. The internet can trip up even the most knowledgeable collectors. Retail stores are filled with pitfalls. Rather than making unnecessary mistakes, do some homework. Here's how:

ACQUIRE A LIBRARY: Find a few books that include information about the watches you like. If you don't want to buy the books, visit a watch store and ask if they'll let you read whatever information they have. Most will be happy to share their resources. However, be wary of books published by the brands they are about — many contain good information, but others are written with marketing more in mind than education.

GO ONLINE: Publications such as *Hodinkee* and *Worn & Wound*, and forums such as TimeZone.com and ThePuristS.com allow you to explore immense amounts of information quickly and easily. You can also get honest feedback about watches from both professionals and other collectors that can prove extremely valuable later.

TALK TO FELLOW WATCH LOVERS: Ask people who know more than you if your new love is a good buy. Find out if the watch is historically important, if the dial is original, if the movement is good, and so on. There's always an expert out there happy to help, if you're willing to look hard enough.

VISIT WATCH STORES: Not all retail outlets are good places to make a purchase; while some are honest and aboveboard, others can be risky. But you can still look at the watches, try them on, and see how they fit. Make a connection with a well-informed salesperson. These people often know a great deal about the industry, such as when a watch might go on sale, when the model line is going to be discontinued, and so on. (But don't become overly concerned with other opinions. The final test of a watch is whether or not you like it and want to wear it. Sometimes you will love a watch that no one else appreciates. There's nothing wrong with that.)

8 BRANDS WHOSE WATCHES ARE LESS EXPENSIVE THAN THEY LOOK

1. BAUME & MERCIER

2. JUNGHANS

3. LONGINES

4. NOMOS GLASHÜTTE

5. ORIS

6. RADO

7. SINN

8. TISSOT

If you're not patient, you may end up in this common trap: You see a watch, you want it, you buy it. A month later, you hate it. Nearly every watch collector has fallen in love at first sight only to fall out of love soon afterward. Watches can be like people; the first impression is excellent, the next isn't.

Here's a tip from a collector who's been burned often: Whenever he sees a new watch he likes, he clips its photo on his refrigerator. His policy: If, after looking at it every day for a month, he finds no other watch he likes more, he's confident the watch will have lasting power. You can easily find an image online of nearly every watch ever made — load shots of any prospective purchase onto your phone and look at it often before buying.

Another tip: If you have an urge simply to make a purchase, think about buying something small to satisfy your craving. A fresh strap can make an old watch look new again, and you'll have spent a fraction of the money.

And before you buy, think about what you actually want to wear. Some serious watch collectors buy a timepiece only to place it in a safe. Is this what you really want? Sometimes the right watch isn't the one that looks best in the vault, but rather on your wrist.

You may like your watch better, and for a longer time, if it suits your personality; for example, if you're an informal person, a fragile gold vintage piece may end up in your drawer forever. And if you're the kind who prefers graceful, slim watches, why buy a big multi-complication sport watch, even if it's a bargain? Likewise, if you've never traveled more than a few hundred miles from your hometown, is a dual time zone item really right for you?

Still, nearly everyone makes mistakes. Bad purchases happen. Don't let them spoil your enthusiasm. Your mistakes are learning experiences; if you bought a fake, you now know how to avoid the next. If you bought a watch you don't like, you now have a better understanding of your taste.

One way to avoid mistakes is to focus on a particular kind of watch. The world of timepieces is enormous. There are hundreds of brands, dozens of complications, millions of vintage watches for sale. You may find that by choosing one area to study, you'll profit from limiting the seemingly infinite. You might want to start off with just American brands, such as vintage Hamiltons or Gruens. Or you may want only racing chronographs. Or, you can pick a quality brand, such as Nomos Glashütte or Oris, that appeals to you but isn't as expensive as the top-end brands, and focus on that.

One simple way to avoid mistakes: Put the watch on your wrist before you buy it. A watch that looks excellent in a photo may look terrible on you. A watch is like any other accessory — even the best-looking one may not flatter you. Some people have rounded wrists, making flat

watches look silly; others have thin wrists and oversized watches hang over the edge.

Here are additional areas to think about:

BRANDS: There is no real top ten; it's all relative. Each brand has strengths and weaknesses. If you like a particular brand, learn as much as you can about it. But be ready for someone who will tell you it's not as good as Brand X. For him, it isn't; for you, it may be perfect.

COMPLICATIONS: Not everyone likes them, but they can add value to a watch. Although some time-only watches are worth a great deal of money, generally the most sought-after watches feature a complication such as a chronograph, a perpetual calendar, a repeater, or a combination of many. But bear in mind that complicated watches can be delicate, and service costs run high. It's a rude awakening to discover that although you could sell your tourbillon for $5,000 over its original price, it costs more than that to service it. And, since very complicated watches are often fragile, you probably won't want to wear them every day.

TRENDS: Be wary of them. For example, watches grew larger and larger each year for over a decade, only to have case sizes start to come down over the last year or two. Vintage-inspired watches are all the rage right now, but will they seem dated in half a decade? Nobody knows. If you're concerned with long-term value, be careful. If you like a particular watch regardless of fashion, follow your heart. But if you're thinking about the future, remember that tastes change: The watch that's so hip today could be tomorrow's extra-wide lapels.

Friedberg's IWC Mark X

Michael Friedberg

Lawyer
Chicago, Illinois, USA

I first became interested in watches in around 1987 when I bought a Rolex GMT-Master II. I'm not sure why I bought it — maybe because it looked great and everyone said it was the world's best watch. Then in 1990, while traveling in Ireland, I saw an Omega watch with a complicated calendar. Soon I'd traded my Rolex.

At one point I was up to fifty watches, but I've cut back to far fewer. All but three are IWCs; the others are a Rolex, a Patek 3940 perpetual calendar, and a special limited-edition Panerai.

My favorite watch is the one I bought yesterday. It's easy to fall in love with your last date. But IWC is my brand. In fact, I'm proud to be the professional moderator of its online forum.

For me, a mechanical watch is an object of industrial art — a synthesis of both design and mechanics. But it's hard to articulate why something has a great design. It's so subjective. It's not like watching a movement in a vibrograph; so many underlying design principles are extremely important. And then there's good mechanics, which watch people love to discuss and which I think can be vastly overrated. Essentially all watches keep time. Some do it better than others, but the parameters are often meaningless in the real world. Unless you're OCD, you're really talking about artistry.

The world of watch collectors is fascinating. I have a Freudian theory about people who get so angry or so defensive about their collection: Their sense of self and self-esteem become so quickly activated; I don't know why. Maybe because a watch can be a symbol; it's a primarily masculine object, which is why large watches sell so well. You can talk about utility of watches, and how large watches are easier to read, but to a lot of people they may simply be a form of reassurance.

Frankly, I think the psychology of the watch collector is a more interesting subject than watches themselves.

Gurevitz's JLC WWII military watch

Steve Gurevitz

Private Investor
Ohio, USA

Way back when I worked in a warehouse, I wore a plain Rado, which I liked — so much, in fact, that I got my wife a smaller version. But her battery kept dying every year, so I started wondering if there were watches that didn't need them, and I ended up buying her a Citizen automatic (which I paid too much for).

I then decided I should have a watch like that too and consulted the Web. I didn't know mechanical watches even existed. Soon I became hooked. I bought a Minerva. An Aude-mars Piguet dress watch (my first and last eBay purchase). An Audemars perpetual (for which I paid too much, again).

At that point I thought I'd have two or three watches, one for every occasion. But then two things happened: One was finding a Peseux 260 watch, and becoming very interested in these 1940s and 1950s movements; the other was my new camera. When I started taking pictures of watches, I really began seeing them for the first time.

So I bought more, and more — a Roger Dubuis, a Journe Octa, a Grand Seiko. Today I have about seventy watches. But I don't think of myself as a collector. I'm an accumulator. The difference is that a collector has a theme, a central focus, a strong purpose that is perhaps higher than "I buy what I like."

My only theme is: If I don't wear it, I don't keep it. I am not trying to preserve them for the future as a collector should. I just like them.

I can't say I have a favorite but at the moment I'm very fond of World War II military watches — especially the Jaeger-LeCoultres. There are twelve official World War II watches. The famous ones are Omega and IWC, but I like the JLCs, because the company made fabulous movements. Everyone else took their best twenty-eight-millimeter movement and adopted it for the watch, but JLC designed a new one.

The back of Jordão's F. P. Journe Resonance

Felipe Jordão

Financial Services
New York City, USA

When I was a baby, I'd always start crying at the exact moment I was supposed to be fed. So my mother called me her little Patek (which made me Patek Felipe.) Maybe that made an impression.

Later, growing up, whenever my parents took me past a watch shop, I'd stick my face right on the window and stare. Not that I understood the mechanical aspects of watches — I just thought they were cool.

But I couldn't afford to buy them yet, although in college I did buy a lot of Swatches.

Then, more than fifteen years ago, I got a TAG for Christmas — my first really nice watch. A few years later I started taking watches seriously, and soon was going online to watch sites and looking around. After deciding my next watch should be a Jaeger-LeCoultre, I started researching, and eventually bought a Reverso Duo. Then I bought a Reverso Sun/Moon in rose gold. Now I really had the bug. I started thinking of all these other categories of watches I desperately needed to have. I got a Zenith El Primero. I got a Minerva pilot's watch. I saved up and got a Lange Up/Down in platinum. Then the Lange 1815 in yellow gold. From there I started selling some pieces, buying others. I decided I had to have an F. P. Journe Octa with a moonphase and traded the 1815 plus some cash for it.

Once I had the Journe, all bets were off. Deep down I always wanted another Journe — the Resonance. So I started scheming on how to get it. Not only did I end up getting that watch, but since the launch of the T30 I now collect almost exclusively watches from F.P. Journe. I think he's sort of a modern-day Abraham-Louis Breguet, really pushing things forward technically and doing more than making the same watches over and over but with different paint jobs.

Boutros's Rolex Submariner

Paul Boutros

Auction House Specialist
New York City, USA

My interest in watches began when I was ten. My father and I walked into a watch boutique and saw a $23,000 IWC pocket watch; the moment I saw its movement, it was love at first sight, the beginning of a lifelong passion, and the creation of an important bond between my father and me.

When my father died, I inherited a collection of watches we'd bought together, including several Patek Philippe, Rolex, and Omega wristwatches. I consider myself the steward of that collection.

When buying, I follow my heart. I buy what I love: vintage Rolex sport watches, Vacheron Constantin, Patek Philippe, Audemars Piguet, and Omega. As an engineer by training, I appreciate these brands' devotion to precision and excellence. Recently, I have developed a taste for yellow gold and factory gem-set watches, a slight deviation from my usual taste.

Among my Rolex pieces, I've been very fortunate to acquire several rare models, including a rare British Navy-is-sued Military Submariner and several Rolex Cosmograph Daytonas. But the watch I'm most proud of is among the rarest of all Rolexes — it's known as the Kew A. One hundred twenty were cased in boys' sized steel cases and sold in 1949. In 1954, twenty-four were cased in mens'-sized 18-karat–gold cases. Mine is the latter type, and is one of five known to exist in original condition.

Watches are the synthesis of much of what I most love: science, art, design, culture, and craftsmanship. And collecting them helps keep the spirit of my father alive; it's a constant reminder of the wonderful times we shared together. I was fortunate enough in 2014 to be able to turn this passion into a new career. I left my corporate job to join the emerging Phillips Watch Department, where I spend my days seeking out, researching, and offering the very best watches I can find.

10 SMALL INDEPENDENT BRANDS TO LOOK OUT FOR

1. AUTODROMO

2. BALTIC

3. BREW WATCHES

4. FARER

5. HALIOS

6. MARTENERO

7. MKII

8. OAK & OSCAR

9. UNIFORM WARES

10. WEISS WATCH COMPANY

RARITY: In general, the rarer the watch, the more likely it is to hold its value. Sometimes this is obvious: A Patek Philippe limited edition means exactly that — few other people will have the watch and that gives it a premium. But there are thousands of limited editions on the market, and just because only a few of each type of watch were made doesn't necessarily mean they're going to become valuable. Also, many brands are now overproducing limited editions, so always be conscious of how many are being made; a limited edition of 20 pieces is meaningful; a limited edition of 2,000 pieces is less so.

MATERIAL: Metal matters. Gold-filled watches generally tend to be worth less than watches made of gold itself; platinum is generally worth more. If you're browsing a flea market and find an old platinum Hamilton, assuming the watch is in good shape, you may have hit the jackpot. However, a more expensive metal doesn't always mean a more expensive watch. A. Lange & Söhne made only a handful of stainless steel Lange 1s, and therefore a steel Lange 1 is much more valuable today than a gold one.

MOVEMENTS: When you're buying a watch, learn about its insides. You don't need to be an expert on movements; few people are. But a good salesperson should be willing to let you look inside the watch, especially if it is a vintage piece. (This does not hold true for many modern watches, where you may void a warranty if you open the case.) Little problems can be serviced, but rust is enemy number one — you're only buying a headache if you purchase a watch with a water-damaged movement. (For more on movements see this page.)

FAKES: The fake watch industry has boomed in recent years. Be vigilant. Some fakes are well done, but many are obvious. Look at the dial and the caseback. Are all the words spelled

correctly? Is the case appropriate for the model? Is the lettering consistent with the brand? People often take good movements and place them in new cases because the old ones were damaged. A smartwatchmaker can help you. He can also show you how to discriminate between an average fake and a sophisticated one, in which original parts from different watches have been used to make one seemingly authentic piece, often called a "frankenwatch." Never be afraid to get a second opinion, and no trustworthy seller will tell you otherwise.

CONDITION: The state of the watch is possibly the most important thing. And this doesn't just refer to a watch looking battered or beaten. Most novices don't take into account what's known as a refinished dial. Dials are the face of the watch, and just as people refinish their own faces through plastic surgery, dials that become overly scratched or oxidized are often refinished in such a way as to make them look like they are original. The problem: In the world of collecting, original condition is important. So even though it might seem counterintuitive, a watch with an original, somewhat damaged dial is generally worth more than the same watch with a beautiful new dial.

Sometimes a redial is easy to detect; the new lettering is slightly askew, or the numbers aren't quite in the right place. At other times, it takes an expert's inspection to identify.

Likewise, if a watch has been heavily polished, it won't be worth as much. This damages the original lines of the case and the integrity of the watch as a whole. Again, original condition is an important part of collecting, and as the vintage market matures, condition is becoming king.

PAPERS: Whenever you buy a vintage watch, risk is involved. Check to see if the original box and particularly the paperwork are available. If so, that may add significant value to the watch. Be careful to match any serial numbers or other identifying information between the watch and the papers, as sometimes dealers will try to mismatch them to achieve a higher price.

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When you've decided what watch to buy, be suspicious if you're being offered a surprising deal. Whenever someone wants to save you money, try to understand why. Bargains exist, but they're rare.

Also, is price what really matters? If you find a watch you truly love and it's a few hundred dollars more than you wanted to spend, does that mean you shouldn't buy it? Some of your most beloved watches won't be bargains, but they'll be lifetime investments.

5 WATCHES THAT ARE MORE COMPLICATED THAN THEY LOOK

1. A. LANGE & SÖHNE RICHARD LANGE "POUR LE MÉRITE"

2. GRÖNEFELD 1941 REMONTOIRE

3. PHILIPPE DUFOUR DUALITY

4. SEIKO CREDOR EICHI II

5. VACHERON CONSTANTIN PATRIMONY CONTEMPORAINE ULTRA-THIN MINUTE REPEATER

Some people feel that the seller is as important a consideration as the watch itself. Finding a seller you can trust is crucial. If you buy from a reputable source, you are much more likely to be getting what you want.

When buying, remember that the sticker price isn't always the real price. You may not be able to bargain at a standard department store, but at most watch outlets, haggle. No one buys a car at the sticker price; the same holds true for most watches. Yes, a few salespeople may look at you like you're crazy, but even there, you won't be the first person who's tried.

Auctions can be an excellent source of vintage (and sometimes new) watches, giving you the opportunity to buy a great watch at a discount price, though finding true bargains is getting harder and harder as auctions attract more attention. Before you bid, go to the exhibition or preview and look at the pieces you're interested in; request full condition reports too — often the most important information doesn't make its way into the catalog.

Maintaining Watches

Once you've bought your watch, only you can keep it in good shape. A watch is a small, finely tuned instrument. While a good one can last many generations, any mechanical device — and certainly one so tiny — will need caring attention to guarantee that it functions at the peak of its capacity. This means that if you're going to collect watches, you'll have to take good care of them.

Unfortunately, the watch repair business is itself in need of repair. One of the best watch technicians, Manhattan-based Alkis Kotsopoulos, says that the primary problem he deals with is the incompetent work done by other watch repairers. He tells the story of a client who'd just purchased a beautiful vintage Rolex chronograph. But when Kotsopoulos opened it, he discovered that so many others had worked on the watch that the movement was in terrible shape: Screws had been replaced and now barely fit, the balance wheel was bent, and the hairspring was unrepairable. There was nothing Kotsopoulos could do but return the watch to his customer and tell him the truth: The watch might never work.

The number of excellent watch experts seems to be shrinking each year. Finding someone whom you can trust won't be easy, but it can be done. The best way to find an expert is to ask friends or do some research on the online forums.

Following are some tips to help you keep your watch in good condition.

READ YOUR MANUAL: Many watches come with a manual. Read it carefully, just as you would any other manual for a complicated device. The better you understand your watch, the more likely it is to behave well. For vintage watches, do independent research so you know

what to expect.

KEEP YOUR WATCHES CLEAN: Before you put your watch away after wearing it all day, wipe off the grime on the back. Don't let the case become a receptacle for dirt.

WIND YOUR WATCHES: At least once a month, wind your watches to give them running time (some people advise as much as once a week, but there's no precise right answer). You don't need to set them if you're not wearing them, but they will perform best if they get wound now and then to keep oils and lubricants from drying out and settling. Many people who own automatic watches use winders, or electrically operated devices that wind automatic watches when the timepiece isn't in use. Watch winders are a smart choice for watches with a perpetual calendar (or some other complex astronomical complication) — that way you won't have to reset the watch every time you wear it.

WIND AND SET CAREFULLY: Place your fingers on both sides of the crown when you wind. If you wind the watch using just one side, you'll be putting pressure in one direction, causing wear on the movement if the stem moves upward. When you use both sides of the crown, you're applying even pressure. For a plain, manually wound watch, it doesn't matter whether you set the time by moving the hands backward or forward. But it can make a difference on a complicated watch, and there are a few (such as minute-repeating watches) that will be damaged if you rotate the hands counterclockwise.

Menz's Lange Saxonia Moonphase

Matthew Menz

Designer
Bay Area, California, USA

My passion for watches came as an absolute surprise. One day a friend and I were walking past a watch store in Carmel, California; my friend suggested we enter. I had no interest but was intrigued. The only clock I needed was on my phone.

Looking at the inventory, I was instantly drawn to the A. Lange & Söhne Datograph Up/Down. I remember thinking, "Wait, how is all that even possible in a watch?" The next one that fascinated me was a Ressence Type 1, followed by a Laurent Ferrier. A seed was sown. From there, my natural tendency to research was sparked and I was hooked. I wanted to learn everything I could about the history of each complication, the watchmakers, and the industry they created.

My first "nice" watch was a cherished gift and represents something very different: a Rolex Explorer II. I was initially drawn to the object itself, then eventually what it represented in terms of great design and traveling the world. I love how a GMT [Greenwich Mean Time] allows you to hold two distant locations together, when on the road or relaxing at home.

Eventually my passion for design and craftsmanship took over. I began to focus on the balance of a dial, the typography, the subtleties of finishing, and the pleasure of losing yourself in the architecture of each movement. Having worked on consumer products where you sweat every detail for an object that will only last two years, thinking about something designed to last multiple lifetimes continues to inspire.

Even now, I don't have a massive collection of watches — that's not the type of collector I am. Instead, I try to have just a few pieces that I really wear and enjoy. I only purchase a watch if it's meaningful to me and I know it will get a lot of time on my wrist. I recently purchased my first A. Lange & Söhne watch, a Saxonia Moonphase, and it in many ways fulfils that initial "wow" moment that I had seeing the Dato-graph in California all those years ago.

Cramer’s Cartier Pasha with its Figaro bracelet

George Cramer

Art Director
Nice, France

As a record company art director, I’ve always been interested in beauty, particularly in industrial design, furniture, and architecture. Everything I buy needs to look good — even if another product is better, I’ll choose the one with the best design.

I’m also very attracted to tradition as well as excellent craftsmanship. And, as an album-cover designer, I’ve been fascinated by the square, as a canvas or just as a design element. There’s something about a square that inspires me. It isn’t a coincidence, then, that the brand that combines all my aesthetic interests is Cartier. My first watch was the square Santos; a few years later I traded it for the original Santos Dumont, which is also square.

Staying with Cartier, in 1985 I bought the just-released Pasha watch with a grill on a leather strap. At that time, there was also a stunning Figaro bracelet available for the watch, but it was soon replaced by a newer, but less interesting model. I desperately wanted that original Figaro bracelet, but I didn’t have the funds.

Still, I kept watching and waiting, until the bracelet sold out in Europe and I realized that if I didn’t act, I’d never be able to buy one. Then I heard from a friend that a boutique in Miami, Florida, still had one in stock. Although I wanted it badly I didn’t have the money. So I took a bold step: I sold my car, booked a holiday in Miami, and bought the best watch bracelet Cartier ever made.

11 MODERN WATCHES INSPIRED BY VINTAGE CLASSICS

1. BREGUET TYPE XX

2. CARTIER TANK AMÉRICAINE

3. HAMILTON INTRA-MATIC 68 AUTO CHRONO

4. JAEGER-LECOULTRE MASTER CONTROL DATE

5. LONGINES HERITAGE 1945

6. OMEGA SEAMASTER RAILMASTER

7. ORIS DIVERS SIXTY-FIVE

8. TAG HEUER AUTAVIA CALIBRE 02

9. TUDOR HERITAGE CHRONOGRAPH

10. VACHERON CONSTANTIN HISTORIQUES 1942

11. ZENITH EL PRIMERO 38MM

13 ICONIC VINTAGE WATCHES

These are the models that have shaped the watch world over the last century — many are still being made today in one form or another.

1. AUDEMARS PIGUET ROYAL OAK — THE ORIGINAL ULTRATHIN, STAINLESS STEEL LUXURY SPORT WATCH, IT LAUNCHED AN ENTIRELY NEW CATEGORY OF POPULAR TIMEPIECES

2. BREITLING NAVITIMER — ONE OF THE FIRST BOLD PILOT'S CHRONOGRAPHS TO ACHIEVE POPULARITY

3. CARTIER TANK — MADE IN COUNTLESS RECTANGULAR FORMS, IT IS INSTANTLY RECOGNIZABLE AND HAS BEEN A FAVORITE OF COUNTLESS CELEBRITIES, POLITICIANS, AND OTHER PUBLIC PEOPLE

4. HEUER AUTAVIA — LONG IGNORED, EARLY EXAMPLES ARE NOW FETCHING HUGE PRICES AT AUCTION

5. IWC MARK IX — THE ARCHETYPAL PILOT'S WATCH ISSUED TO REAL MILITARY AVIATORS

6. JAEGER-LECOULTRE REVERSO — FIRST MADE IN 1931, THESE RECTANGULAR WATCHES FROM THE PAST ARE AS STUNNING AS THE ONES BEING MADE TODAY

7. OMEGA SPEEDMASTER PROFESSIONAL — THE WATCH THAT NASA FIRST CHOSE FOR APOLLO ASTRONAUTS

8. PATEK PHILIPPE CALATRAVA REFERENCE 96 — THE VERY FIRST CALATRAVA AND ARGUABLY THE MOST CLASSIC DRESS WATCH OF ALL TIME

9. PATEK PHILIPPE CALATRAVA REFERENCE 2526 — THE COMPANY'S FIRST AUTOMATIC WATCH AND ONE OF ITS MOST BEAUTIFUL

10. ROLEX DAYTONA — THE MOST COLLECTIBLE VINTAGE WATCH THERE IS TODAY

11. ROLEX SUBMARINER — PROBABLY WHAT COMES TO MIND WHEN YOU THINK "DIVE WATCH"

12. SEIKO "TURTLE" DIVER — THE CHUNKY SPORT WATCHES ARE INEXPENSIVE AND BUILT LIKE TANKS

13. UNIVERSAL GENÈVE TRI-COMPAX — COMBINATION CALENDAR AND CHRONOGRAPH WITH MANY SIMILARITIES TO PATEK PHILIPPE WATCHES OF THE 1940S AND '50S

6 MANUALLY WOUND CHRONOGRAPHS

1. A. LANGE & SÖHNE DATOGRAPH — ONE OF THE MOST FINELY ENGINEERED AND DECORATED CHRONOGRAPHS EVER MADE

2. HEUER CARRERA REFERENCE 2447 — THE DAYTONA'S MORE MINIMALLY STYLED COUSIN FROM THE 1960S

3. MONTBLANC 1858 MONOPUSHER — UTILIZES AN EXCEPTIONAL MINERVA MOVEMENT IN A MODERN DESIGN

4. PATEK PHILIPPE REFERENCE 5070 — AS CLASSIC AND EXEMPLARY AS A SWISS CHRONOGRAPH CAN GET

5. ROLEX DAYTONA REFERENCE 6263 — THE QUINTESSENTIAL MID-CENTURY RACING WATCH

6. VACHERON CONSTANTIN HISTORIQUES CORNES DE VACHE — A TRADITIONAL MOVEMENT COMPLEMENTED BY A FANCY 50S-STYLE CASE

KEEP YOUR WATCH DRY: If your watch is not water-resistant, or only mildly so, avoid moisture. Watch repairers such as Kotsopoulos tell of people who complain that their watch inexplicably stopped, only to find that it's simply waterlogged. Many people don't realize that total waterproofing is next to impossible; the best you can hope for is a high degree of water resistance. Water resistance is only as good as the watch's gaskets. A watch frequently exposed to soap, salt, or a sauna will run a high damage risk. If you see condensation under the crystal, bring the watch to a watch-maker immediately. Rust on steel parts can form within a day if salt water is collecting inside. And remember that you should have your watch's water resistance verified once a year, as manufacturers recommend (practically no one actually does), if you're going to be wearing it to shower or in the pool.

DON'T JOLT YOUR WATCH: You know better than to drop your watch on the floor. But do you know better than to wear your gold watch next to a bracelet or gold chain? Gold is a soft

material, and the friction of one metal against another will scratch the case; a stainless steel or titanium watch resists scratches better.

SERVICE YOUR WATCH: Most watch experts believe a watch should be serviced as often as the manufacturer recommends. A vocal minority claims that servicing can actually hurt a watch, because the potential for damage is high. One expert says, "A modern piece with readily available parts probably shouldn't be serviced until it stops performing well, makes funny noises, or otherwise misbehaves. The chances of the movement being damaged during regular service by a watchmaker are at least as great as the chances of doing any real damage by just running it until it can't run anymore. And, in general, the cost of watch service will not be any greater even if a major part needs to be replaced (at a manufacturer's service center). Such a course of action for a very expensive, complicated, or rare piece is probably unwise, likewise for a vintage piece without readily available replacement parts, but for a modern Rolex, IWC, or Omega, for example, it is hard to refute."

STORE YOUR WATCHES CAREFULLY: The more airtight, and therefore dust-free, the environment, the better — especially for vintage watches. You don't need to find a vacuum, but don't store them in the bathroom or any other place where the humidity could seep inside the case. A flat, dry place is best.

DON'T EXPECT PERFECT TIME: Be patient with a vintage watch. Even a great watch may lose a few minutes a day. An old watch is more fragile than a new one; the shock-resistance systems the watch industry uses today did not appear until the mid-twentieth century. For the most part, vintage watches can be worn every day, but you should still treat them with the understanding that they're decades-old mechanical objects.

IF YOUR NEW WATCH BREAKS, BRING IT BACK TO THE STORE WHERE YOU BOUGHT IT: If this isn't possible, deal directly with the manufacturer. Some of the newer brands may not have an international service program, making it difficult to find a convenient repair operation, so you may have to send the watch to the manufacturer, which generally means to Europe. If you can't do this, find a talented repairer who will try to find original parts before improvising. Be patient. Watch repair can be a lengthy process. The parts may not be readily available.

7 CONTEMPORARY TRAVEL WATCHES

1. GRAND SEIKO HI-BEAT GMT — A SLEEKER, JAPANESE TAKE ON THE CLASSIC GMT COMPLICATION

2. GREUBEL FORSEY GMT — A TINY ROTATING GLOBE TRACKS THE EARTH'S ROTATION; MAYBE THE MOST SUPERLATIVE TRAVEL WATCH EVER MADE

3. LAURENT FERRIER TRAVELLER — A TWO TIME-ZONE WATCH THAT ADJUSTS WITH PUSHERS ON THE LEFT SIDE OF THE CASE

4. MONTBLANC HERITAGE SPIRIT ORBIS TERRARUM — A MAP AT THE CENTER SHOWS DAY AND NIGHT IN THE NORTHERN HEMISPHERE.

5. NOMOS GLASHÜTTE ZÜRICH WELTZEIT — ONE DISC TELLS YOU WHAT CITY IS "LOCAL TIME" WHILE ANOTHER KEEPS YOU AWARE OF THE TIME BACK HOME

6. PATEK PHILIPPE RE. 5531 — THE FIRST COMBINATION MINUTE REPEATER AND WORLD TIMER EVER TO BE ABLE TO CHIME LOCAL TIME

7. ROLEX GMT-MASTER II — THE MODERN INCARNATION OF THE WATCH THAT DEFINED THE JET AGE

7 GO-ANYWHERE SPORT WATCHES

1. BREMONT MBII — MADE IN PARTNERSHIP WITH MILITARY JET EJECTION SEAT EXPERT MARTIN BAKER

2. IWC PILOT'S WATCH CHRONOGRAPH TOP GUN — A BLACKED-OUT TAKE ON THE TRADITIONAL AVIATOR'S CHRONOGRAPH

3. LONGINES LEGEND DIVER — A SUPER COMPRESSOR-STYLE DIVE WATCH THAT RECALLS A MODEL FROM THE 1960S

4. OMEGA SPEEDMASTER "DARK SIDE OF THE MOON" — A CLASSIC DESIGN, BUT RENDERED IN SCRATCH-PROOF BLACK CERAMIC

5. PANERAI LUMINOR SUBMERSIBLE 1950 BRONZO — A CHUNKY BRONZE DIVER FROM THE COMPANY THAT FIRST POPULARIZED THE METAL

6. ROLEX SEA-DWELLER — THE TOUGHEST DIVE WATCH IN THE COMPANY'S PORTFOLIO

7. TUDOR PELAGOS — A TITANIUM CASE AND BRACELET MAKE IT EXTREMELY TOUGH BUT LIGHTWEIGHT

DON'T CHANGE THE BATTERY: That is, don't change it yourself. Take the watch to an expert and let him or her do it. Unless you're very knowledgeable, you could damage the watch when you open it and leave behind unsightly scratches. And if your battery-operated watch has stopped, have the batteries changed immediately before the old battery drips fluid onto the movement. If you're not wearing your battery-operated watch, some feel it is best to remove the battery to extend its life, as well as to reduce wear and tear on the watch. Others claim it is better to let the battery stay inside the watch and die in two years rather than try to save it, because the battery may leak and the resulting acid spillover can destroy a movement.

14 WATCHES THAT ARE FUN TO WATCH

1. A. LANGE & SÖHNE ZEITWERK — INSPIRED BY A DRESDEN OPERA HOUSE CLOCK, IT HAS AN INSTANTLY JUMPING DIGITAL READOUT

2. AUDEMARS PIGUET ROYAL OAK TOURBILLON EXTRA THIN OPENWORKED — A BOLD DESIGN, WITH THE COMPLICATED MOVEMENT STRIKINGLY SKELETONIZED FOR MAXIMUM IMPACT

3. F.P. JOURNE CENTIGRAPHE — USING A FOUDROYANTE, IT SHOWS TIME MEASURED TO 1/100TH OF A SECOND

4. JAQUET DROZ CHARMING BIRD — A SMALL BIRD AUTOMATON SPINS AROUND AND CHIRPS BELOW THE DIAL ON DEMAND

5. MB&F LEGACY MACHINE SPLIT ESCAPEMENT — THE BALANCE WHEEL IS SUSPENDED ABOVE THE DIAL BY A CURVED BRIDGE

6. PATEK PHILIPPE REFERENCE 5372 — COMBINES A PERPETUAL CALENDAR WITH A MONOPUSHER SPLIT-SECONDS CHRONOGRAPH

7. PIAGET ALTIPLANO ULTIMATE 910P — YOU CAN SEE THE ENTIRE MECHANISM RIGHT ON THE DIAL OF THE WATCH

8. RESSENCE TYPE 3 — WITH AN OIL-FILLED UPPER CHAMBER, THE DIAL'S MARKINGS APPEAR AS IF THEY WERE PAINTED DIRECTLY ONTO THE SAPPHIRE CRYSTAL

9. ROMAIN GAUTHIER LOGICAL ONE — THE FUSÉE-AND-CHAIN MECHANISM HAS SYNTHETIC RUBY LINKS AND IS FULLY VISIBLE ON THE DIAL

10. ULYSSE NARDIN INNOVISION 2 — THE MOVEMENT ITSELF FUNCTIONS AS THE HANDS TO TELL TIME

11. URWERK EMC — HAS A BUILT-IN TIMING METER SO YOU CAN CHECK THE WATCH'S PRECISION AND ADJUST ON THE FLY

12. VAN CLEEF & ARPELS MIDNIGHT PLANÉTARIUM — A MINIATURE MODEL OF THE SOLAR SYSTEM FOR YOUR WRIST

13. VIANNEY HALTER DEEP SPACE — THE DRAMATIC CENTRAL TOURBILLON TURNS ON THREE AXES AT ONCE

14. ZENITH DEFY LAB — AN EXPERIMENTAL OSCILLATOR MADE OF SILICON BLADE SPRINGS SPANS THE WHOLE DIAL AND VIBRATES AT 15 HERTZ

Perhaps the most celebrated of all travel watches made in quantity is the Rolex Sporting Prince. Using the same movement as a regular Prince wrist model, these watches were extremely popular in the 1930s and 1940s. They are very hard to find in good condition today.

This Tiffany watch from the 1930s has an unusual feature: The watch dial swivels out from the case as the sides of the watch are pressed, allowing the dial to be seen on what is the reverse side of the case.

An 18-carat Audemars Piguet gold coin watch from the 1970s. Although not truly a travel watch, coin watches are easy to carry anywhere, can be set up on a table like any other travel watch, and have been manufactured by many brands, from Corum to Ebel to Patek Philippe.

A very small black-and-green enamel Cartier watch from the 1930s or ’40s. The movement is marked European Watch Company.

Marconi was another name Rolex used in the 1920s for some of its less expensive models. This Marconi Rolex has an alligator skin case.

This Rolex from the late 1920s has a 15-jewel movement marked Unicorn, which was one of the several names Rolex labeled its watches with in its early history.

Travel Watches

Nearly everyone is familiar with wrist and pocket watches — but another variety of watch was quite popular throughout much of the last century. Starting in the 1910s, manufacturers began experimenting with the notion of combining a pocket watch and a wrist watch into one timepiece by encasing a wristwatch-sized dial and movement inside metal cases made of silver, gold, or steel (often in combination with leather) so that the dial could not be seen until opened through a catch or other device.

Most of the watches also had an additional feature, such as a small metal stand or a flat back, that allowed them to sit on a desk or night table and be viewed as though they were a clock. Some even had alarms while very few had date functions.

These hybrids were known by various names: travel watches, sport watches, golf watches, and purse watches. The latter name has become their most common moniker in recent times, but the term is misapplied — Movado made a series of Ermeto watches primarily (but not exclusively) for women that became known as purse watches, but eventually all these hybrids were categorized as purse watches despite the fact that the majority of them made by other brands were actually designed for men.

These travel watches were quite popular into the early 1960s but slowly faded into extinction when more convenient battery-operated travel clocks came along. Along the way dozens of companies manufactured them; some, such as Rolex or Hermès, on a watch-by-watch basis depending on customer requests; others, like Tiffany or Dunhill, much more frequently — as did such American companies as Elgin and Benrus. Some manufacturers — for instance, Cyma, Tavannes, Longines, Driva, and Tissot — not only made them but also created movements for other companies, especially Cartier. Finally, a number of high-end outfits like Vacheron Constantin and Gubelin created beautiful and unique models — many with individual features such as separate winding crowns, hidden catches, or sliding cases

Today these travel watches are hard to find in excellent condition. They are priced relatively cheaply compared to other vintage watches considering the excellent movements and the amount of work that went into creating them. Lower-priced models can sell for as little as $200. The high-end items such as a mint Rolex Sporting Prince can cost up to $9,000. A few special-order travel watches, especially heavily jeweled ones made for or by brands such as Aude-mars or Vacheron, can command considerably more.

An extremely rare and unusual wooden travel watch, made by Van Cleef & Arpels around 1950. A wooden panel slides out to reveal the watch. In 2001 Van Cleef & Arpels reissued what they called the “Pendulette Domino” watch in a limited edition.

Movements

Most people have no idea what makes their watches tick — literally. They've never looked inside; the movement is of little to no interest to them. Watchmakers claim it isn't uncommon for a customer to bring in a watch that isn't working well and ask if it needs a new battery. The watch turns out to be mechanical, and the only reason the watch isn't working is that the owner hasn't bothered to wind it.

This isn't to say that to appreciate watches you must know how they work. But there's something to be said for looking inside a watch and beholding the small miracle called a movement. Not only are you peering back into history — the mechanical movement in today's watch is in many ways the same as that found in a clock dating from 1500 — but you are also examining a remarkable piece of machinery. These days, you often don't even have to remove the back of a watch to see its movement. More and more watches come with sapphire glass backs that allow you to gaze inside and behold the inner workings. And if you have a mechanical bent, you can even buy a very inexpensive watch and experiment with it yourself. Every time you take a watch apart, you risk sacrificing a little of its excellence as you put it back together — even if you're an expert — but there's great satisfaction to be had in dismantling and reassembling a watch movement.

To collectors who love movements — and there are legions of them — not knowing about a movement is akin to owning a sports car but being clueless about the engine. Such enthusiasts say the culture of a watch company is readily apparent from a look inside one of its creations.

The beauty lies in craftsmanship — the craft of design, as well as the craft of execution; for instance, some will wax poetic about the beauty of, say, the Patek 240 movement. It's something wonderful, they declare, perhaps the greatest movement around. A simple flat, automatic movement with a minimum number of parts, it manages to make every part count, and every part that counts is elegant and beautifully executed. The Patek 240 epitomizes what makes a movement great.

LANGE L941.1 PHILIPPE DUFOUR SIMPLICITY JLC 975

What else makes a movement great? Visual details. A movement can involve just as many aesthetic choices as the dial. The shape of the parts is not always functionally determined — some of them can be fashioned with straight lines and sharp angles or smooth sweeping curves, purely at the whim of the designer. The finishing makes the movement seem to glow with a patina as distinct as the dial's. (Finishing, the last step in the production of any part or component, generally refers to the decorative detailing of the watch movement or case.)

Interest in watch movements has surged as platforms like Instagram give collectors more opportunities to share photos of incredible examples, and forums offer places for enthusiasts to wax poetic about their favorites. Many experts feel that the level of finishing has improved over the last decade or two as a result. And few companies dare sell expensive watches with inexpensive movements today — they will be found out immediately by the community and exposed. In short, companies can no longer say whatever they want about a product — they know that their movements are being scrutinized by the world.

GLASHÜTTE ORIGINAL 95 JLC CAL. 822 AUDEMARS PIGUET 3120

10 MOVEMENTS TO KNOW

1. A. LANGE & SÖHNE L121.1 — POWERING THE CURRENT GENERATION OF LANGE 1 WATCHES, THIS IS A CONTEMPORARY TAKE ON TRADITIONAL GERMAN WATCHMAKING, WITH A THREE-QUARTER PLATE MADE OF GERMAN SILVER AND JEWELS SET IN SCREWED GOLD CHATONS

2. AUDEMARS PIGUET 2121 — HAVING FAMOUSLY APPEARED IN THE VERY FIRST ROYAL OAK, THIS MOVEMENT IS STILL USED TODAY. IT IS ONE OF THE MOST RELIABLE SLIM AUTOMATIC MOVEMENTS EVER MADE

3. ETA 2892 — THE BEST MASS-PRODUCED MOVEMENT, AVAILABLE IN A WIDE VARIETY OF WATCHES. CAN BE TUNED TO CHRONOMETER STANDARDS AND IS A GREAT ALL-AROUND PERFORMER

4. GRAND SEIKO 9R — SPRING DRIVE IS A PROPRIETARY HYBRID TECHNOLOGY THAT USES A QUARTZ REGULATOR, A CONTINUOUSLY ROTATING FLYWHEEL, AND A MECHANICAL POWER SOURCE TO KEEP TIME

5. LEMANIA 2320 — MODIFIED VERSIONS OF THIS MANUALLY WOUND CHRONOGRAPH MOVEMENT HAVE BEEN USED BY PATEK PHILIPPE, VACHERON CONSTANTIN, AND NEARLY EVERY OTHER HIGH-END WATCHMAKER

6. LONGINES 13ZN — CHRONOGRAPH MOVEMENTS KNOWN FOR THEIR ELEGANT MECHANICS AND EXTREME RELIABILITY, MONOPUSHER AND CENTRAL MINUTE VARIATIONS WERE MADE AS WELL

7. OMEGA 8900 — UTILIZES THE GEORGE DANIELS–DESIGNED CO-AXIAL ESCAPEMENT, IS MADE OF NON-MAGNETIC MATERIALS, AND IS MASTER CHRONOMETER CERTIFIED. ABOUT AS GOOD AS A MODERN MOVEMENT GETS

8. PHILIPPE DUFOUR SIMPLICITY — ARGUABLY THE MOST BEAUTIFULLY AND THOROUGHLY DECORATED MOVEMENT EVER MADE, IT IS A SUPERLATIVE CASE STUDY IN TRADITIONAL SWISS TECHNIQUES

9. ROLEX 3255 — ROLEX HAS BEEN MAKING OUTSTANDING UTILITY-DRIVEN MOVEMENTS FOR NEARLY A CENTURY, AND THIS IS THE LATEST AND GREATEST, WITH A THREE-DAY POWER RESERVE, PARACHROM HAIRSPRING, AND A SPECIAL CHRONERGY HIGH-EFFICIENCY ESCAPEMENT

10. ZENITH EL PRIMERO — THIS WAS THE VERY FIRST AUTOMATIC CHRONOGRAPH MOVEMENT, DEBUTING IN 1969, AND TODAY IT IS STILL ONE OF THE BEST, DESPITE BEING NEARLY LOST FOR OVER A DECADE

OMEGA
WATCH Co
SWISS
SEVENTEEN
17 JEWELS
CAL 321
25448433

HOROLOGY FROM A TO Z

ADJUSTED: The process by which the rate of the watch is aligned to be as close as possible in different physical positions, as well as in different states of winding (for example, fully wound versus after twenty-four hours running) and in different temperatures. A fully adjusted watch is typically one that is adjusted for five positions (crown down, crown left, crown up, dial up, and dial down), isochronism (states of wind), and temperature (both heat and cold), for a total of eight adjustments.

ALARM WATCH: A watch with a built-in bell or buzzer that can be set to ring at a specific time.

AMPLITUDE: The maximum angular displacement of the balance wheel from its resting position, measured in degrees. Often used as an indicator of a watch movement's running health.

ANALOG DISPLAY: There are two kinds of time displays: One is called analog, which is the standard dial formation with hands (generally hour, minute, and second); the other display is called digital, and it displays the time as a readout, for example, 7:32. The latter is usually displayed through the LED or LCD, although some mechanical watches have digital displays using discs that can be seen through apertures.

ANNUAL CALENDAR: A calendar mechanism that automatically adjusts itself for the long and short months of the year (with the exception of February). More complicated than a simple calendar (which must be adjusted for all months of fewer than thirty-one days), less complicated than a perpetual calendar.

ANTI-MAGNETIC WATCH: A watch with features incorporated into the movement or, more commonly, the case that protects it from disturbances caused by magnetism.

ANTI-REFLECTIVE COATING: A thin metallic coating applied to the crystal to help eliminate glare; usually applied to the inside of the crystal but sometimes to both sides.

APERTURE: An opening on a dial through which can be seen displays such as the date, day, month, or moonphase.

APPLIQUE: Numerals or symbols that are adhered to a dial.

ARBOR: A rotating post (or axle) in a watch movement. Typically the central portion of a wheel (containing the pinion) or the central attachment point of the mainspring; the barrel arbor.

ATM: Refers to a watch's water-pressure rating. ATM is short for atmosphere and roughly the equivalent of ten meters of depth; i.e., a watch with a rating of 1 ATM means it is safe under ten meters of water; a 5 ATM rating means fifty meters.

AUTOMATIC WATCH: A self-winding watch; a watch that does not have to be wound manually. It winds itself by the action of the watch on the wearer's wrist, typically through a semicircular rotor inside the watchcase that winds the main-spring. The rotor winds either in just one direction or two directions. (Some brands prefer one style, some the other; Patek watches usually wind in one direction, Rolexes in both directions.) The automatic movement was first dreamed up by Abraham-Louis Perrelet in 1770, but not successfully put into practice until Englishman John Harwood's 1923 automatic wristwatch prototype.

AUTOMATON: An animated component or character on a watch that performs some action on command, typically associated with a minute repeater or other striking complication, and often depicting erotic scenes. Also known as a Jacquemart.

AVIATOR'S WATCH: Traditionally, a big watch with an oversized dial and luminous numbers and hands; aircraft navigators wore this type of watch with long leather straps over the sleeve, i.e., the watch was worn outside the flight jacket.

BALANCE: The equivalent of a pendulum of a clock in a watch. The balance vibrates back and forth (similar to a pendulum); the vibration produced is determined by the size and weight of the balance combined with the strength and length of the hairspring. The balance, vibrating at a set frequency, controls the watch's timekeeping.

The balance spring (also called the hairspring) makes the balance swing back and forth, dividing time into equal parts. Each back-and-forth movement of the balance is called an oscillation. One oscillation is composed of two vibrations.

In modern watches, the rate of the balance wheel (see following entry) is between 18,000 and 36,000 oscillations per hour.

BALANCE WHEEL: The rough equivalent of a pendulum in a clock. Instead of relying on gravity as the restoring force, it uses a spiral-shaped spring (the hairspring).

BALL-BEARING: A bearing that employs stainless steel balls rolling in an enclosed space to reduce friction, usually found on the rotor of automatic watches. Some companies have begun using ceramic ball-bearings; theoretically they are a longer-lasting, more efficient alternative.

BARREL: The watch's power source, and the mechanical equivalent of a battery. The barrel

has a large coiled spring that can be wound to transmit the driving force to the power train.

BEAT RATE: The frequency of oscillation of the movement, usually expressed as vibrations (ticks) per hour (VPH) or as a proper frequency in hertz (Hz). Beat error is the symmetry of the "tick" and the "tock" in a mechanical movement; if the vibrations of the balance are perfectly equal in both directions, it is said to be in beat, i.e., it has no beat error.

BEZEL: The ring around a watch's crystal that sometimes holds the crystal in place and sometimes is merely decorative. Bezels are usually static, but can also rotate to make mathematical calculations or keep track of elapsed time.

BI-DIRECTIONAL WINDING: An automatic mechanism that winds the mainspring with the rotor spinning in both the clockwise and counterclockwise directions.

BIG DATE: An oversize date display, typically made up of two overlapping discs for the different digits.

BOMBE: French for "convex." A round, or domed, shape. Sometimes used to describe a specific, bulbous lug shape, for example, bombe lugs.

BRACELET: A metal watchband, usually in steel or gold.

BREGUET HANDS (also called pomme hands): They feature a straight or slightly leaf-shaped shaft with a small circle and a slightly off-center cutout and a pointed tip.

BREGUET NUMERALS: Numbers designed in the style of Abraham-Louis Breguet.

BREGUET OVERCOIL: See Overcoil hairspring.

BRIDGE: The structure in a watch that usually supports any part of the movement and is secured on two sides; the framework of the watch.

BUBBLE BACK: Early Rolex cases with backs shaped in the form of a slight bubble.

BUMPER WIND: An early version of a modern automatic watch in which the rotor, or the oscillating weight, does not rotate a full 360 degrees but only a portion of that. It sometimes has springs at the end attached to the rotor or frame; when it winds it bumps back and forth between the two springs.

BUTTERFLY CLASP: A watch bracelet or band in which the two ends of the buckle fold over into the center.

CALENDAR WATCH: A watch with a pointer, subdial, or aperture that tells the day of the week, the date, and the month, or some combination of these.

CALIBER: The designation used to indicate different types of movements by a watch manufacturer; usually used in relationship to a number, such as the JLC cal. 889, with the 889 referring to a series of different distinct movements, such as the 889/1 or 889/2. Historically, the caliber number bore some relationship to the diameter of the movement.

CANNON PINION: The friction clutch in a watch movement that allows the hands to be set independently of the motion of the gear train.

CARILLON: A repeater or other striking watch with three or more gongs.

CASE: The metal container holding the watch movement; usually in steel, gold, titanium, or platinum. Older watches were often cased in silver.

CASE BACK: The underside of a watch, usually signed by the brand. A recent trend has been to make case backs transparent, i.e., featuring a synthetic crystal that allows a view of the movement.

CENTRAL SECONDS (also called sweep seconds): A second hand located in the center of the dial, as opposed to sub-seconds. Central seconds are divided into two types, direct and indirect, referring to whether the second hand is part of the wheel train's power flow; if not, it is indirect.

CHRONOGRAPH: A watch featuring an additional stopwatch function. Chronographs have two separate, and independent, time systems. One tells the time of day; the other functions like a stopwatch and measures intervals of time. Most modern chronographs have two pushers: One starts and stops the timing; the other resets the hands to zero when the timing is stopped.

CHRONOMETER: To become certified as a chronometer by the Contrôle Ogciel Suisse des Chronomètres (COSC), a watch must pass stringent, internationally agreed-upon tests relating to its accuracy. The COSC is a Swiss government agency that tests watches to guarantee they can time within an acceptable error rate. The watch is tested in five different positions (dial up, dial down, crown down, crown left, and crown right) and at temperatures replicating the conditions under which the watch will be worn.

CLOISONNÉ: A decorative enameling technique using tiny threads of gold to separate various colors to create a design or image. Sometimes used for finer watch dials or cases.

COAXIAL: In a loose sense, the term means sharing the same axis. Today the term generally refers to a coaxial escapement, which was invented by George Daniels and recently implemented by Omega.

The coaxial escapement is more complex than the traditional lever escapement; it has more parts and requires more precise adjustment. On the other hand, it is theoretically impervious to the influence of lubrication, the proper condition of which the traditional lever escapement is entirely dependent on. It also features a smaller angle of interaction between the pallet fork and the balance wheel, thus minimizing another disturbing influence to the timekeeping.

COIN WATCH: A watch movement inserted inside a coin, which then serves as the watchcase. Usually the coin, most often an older gold piece, is fitted with lugs and a normal band; sometimes the watch stands alone as a pocket watch. Corum helped pioneer the trend, but other brands have also manufactured them.

COLUMN WHEEL: A control mechanism consisting of a wheel with ratchet teeth on the bottom and vertical columns on top; traditionally it was employed by finer chronograph movements to coordinate the start, stop, and reset functions.

COMPLICATION: A basic watch tells the time; extras such as the day, the date, or the month are generally called complications. Other complications include a chronograph function, a power-reserve indicator, an alarm, and a moonphase indicator. Rarer and more complex, and therefore more valuable, complications include a perpetual calendar, a tourbillon, and a repeater.

COSC: Contrôle Ogciel Suisse des Chronomètres. See Chronometer.

CÔTES DE GENÈVE: A regular decorative pattern of parallel waves, usually on the movement bridges; sometimes referred to as Geneva stripes.

CROWN: A knob on a watchcase that winds the mainspring in mechanical watches. The crown also sets the time, and at a different position, sometimes the day and date.

CROWN GUARDS (also called horns): Protrusions from the side of the case next to the crown to protect it from getting knocked or bent on sport watches.

CRYSTAL: A transparent cover made of glass, plastic, or synthetic sapphire that protects the dial. (Synthetic sapphire is actually crystallized aluminum oxide.) Although most crystals today are scratch-resistant, they are not scratchproof — they are not as hard as a diamond, and some substances can leave marks.

CURB PINS: The pins on the regulator that restrict the hair-spring and control its effective length, consequently determining the rate of the watch. Also known as regulating pins.

CYCLOPS: The small lens on a crystal that magnifies the date, making it more readable.

DEMI-HUNTER CASE (also called half-hunter): A protective lid hinged to a watchcase to

cover the dial but with a hole in the center large enough so the time can still be read.

DEPLOYANT (also called a folding clasp): A buckle on a watch strap that opens and closes using hinged extenders. Invented by Louis Cartier in 1910, a deployant buckle is easier to fasten than a normal buckle and prevents the watch from falling oK the wrist.

DIAL: A watch's face.

DIGITAL DISPLAY: Time shown by using numbers instead of hands on a dial.

DISPLAY BACK: A transparent back that allows the movement to be viewed; usually made of synthetic sapphire.

DOPPELCHRONOGRAPH: See Split-seconds chronograph.

DUAL-TIME WATCH: A watch that displays an additional time zone.

DUO-DIAL WATCHES: Watches with faces divided into two parts; traditionally the hour and minute hands are on top, and the second hand is below.

ÉBAUCHE: Historically this French term meant an unfinished, raw movement with just the main plate, the wheels, and the bridges. More recently it has come to mean anything from a raw movement supplied as a "parts kit" to an entire decorated, assembled, and adjusted movement; often used in reference to manufacturers supplying watch brands with completed movements upon which the latter then put their names.

EQUATION OF TIME: The difference between the clock time and the time defined by the position of the sun. Because we divide the day into twenty-four equal hours, true solar time may differ slightly.

ESCAPEMENT: This most important part of the watch movement serves a dual function — it makes sure the oscillator keeps oscillating, whether in a pendulum-based clock or in a balance-wheel-based mechanical watch, and it also releases the power from the mainspring in very regulated increments that control the motion of the hands and therefore the display of the time.

ESCAPE WHEEL: Driven by the gears in the power train, it regulates the unwinding action of the mainspring and supplies power to the balance wheel via the pallet fork in a lever escapement watch.

FAST-BEAT: Historically, any watch movement with a beat rate higher than 18,000 VPH (vibrations per hour); today it often is applied to movements with 28,800 or 36,000 VPH.

FINISHING: The final step in manufacturing any part or component. A crude or rough surface created by a file or a saw blade is generally said to be unfinished, whereas a highly polished or carefully grained (brushed) and beveled surface is said to be finely finished (depending on how well it's done).

Some finishing details are critical to the proper operation of the part in question and are called functional finishing. Other finishing details are purely decorative and demonstrate the skill of the watchmaker.

Generally when collectors discuss finishing, they're referring to the decorative detailing of the movement or case. There is a complex language of finishing styles and techniques that might be discussed by movement connoisseurs in the same way wine lovers discuss grape varieties, vintages, and terroir.

FLYBACK HAND: A term that has two semi-distinct meanings in watchmaking. It can be used to differentiate a flyback chronograph (the chronograph can be instantaneously reset and restarted with a single push of the flyback, or reset, button) from a conventional chronograph, in which you push the start/stop button, the reset button, then the start/stop button again to accomplish the same function.

The term is also often used to describe the reset action of a conventional chronograph or any hand that retrogrades — or returns to a start position with an instantaneous action, i.e., flyback hand, flyback action, flyback function.

FOUDROYANTE: A small dial on a chronograph marked 0 through 8. The small hand on the dial completes a sweep every second, allowing the time to be read in eighths of a second. Foudroyantes have also been produced with 1/4-or 1/5-second readings.

FREE-SPRUNG BALANCE: A balance and hairspring that does not involve a regulator and curb pins; instead, screws, nuts, or inertia blocks on the balance rim alter the moment of inertia of the balance to change the rate.

FULL ROTOR: Automatic watches with oscillating weights, or rotors, that rotate through 360 degrees, to distinguish them from a bumper wind.

GASKET: A formed piece of rubber or nylon (cork and even lead were used in the past as well), designed to prevent water from entering the case.

GEAR TRAIN: An assortment of wheels and pinions that slow down or speed up the transfer of rotational energy.

GENEVA SEAL: Dating back to 1886, a seal that certifies a watch meets certain standards of quality set by the Canton of Geneva (exclusively for movements produced in Geneva); these standards were revised (and tightened) in 1957.

GLUCYDUR: A trade name for beryllium copper, used to make high-grade balance wheels.

GMT: A watch that displays Greenwich Mean Time in addition to the local time; also called UTC (Coordinated Universal Time).

GOLD-FILLED: Rather than being made of 100-percent gold, a gold-filled case is one in which gold bars are soldered to a base metal, then rolled into sheets, providing a higher thickness of gold than gold-plating.

GRANDE SONNERIE: A watch that strikes hours and quarter hours in passing; typically also accompanied by a minute-repeater function.

GUILLOCHE: The French word for engine turning, used to describe a decoration most commonly found on the surface of a watch dial.

HACKING: A feature that stops the second hand when you pull out the stem to set the time, allowing you to set the time to the second; this is particularly useful when coordinating with a time signal or synchronizing two watches.

HAIRSPRING (also called balance spring): A very thin, spiral-shaped spring; coupled with the balance, it forms the harmonic oscillator that controls the timekeeping in the watch.

HAND: The indicator that moves over the dial to point to the hour, minute, or second. Hands come in a variety of shapes, including baton, Breguet, sword, arrow, and so on.

HUNTER: A watchcase fitted with a front cover.

INCABLOC: A trade name for the most commonly used kind of shock protection.

INTEGRATED BRACELET: A metal watchband incorporated into the watchcase.

ISOCHRONISM: Technically, the extent to which the balance will keep the same rate at varying amplitudes, whether the changes in amplitude are the result of horizontal to vertical positional changes or varying states of wind; generally used to indicate whether a watch keeps the same time when fully wound or half wound, etc.

JEWELS: When referring to movements, jewels are the bearings used to reduce friction. Synthetic rubies are used because of their hardness, which reduces friction and wear. A high number of jewels does not necessarily mean a watch is of higher quality; only a certain number of jewels are needed to allow a watch to perform optimally.

JUMPING HOUR: A watch in which the hour is indicated by a number springing into view,

rather than by a hand; also referred to by the French term *heures sautantes*. Less commonly, a traditional hour hand that jumps in one-hour increments precisely at the change of the hour.

KARAT: The measure of gold content. Pure gold is 24 karats; 14 karats means 14 parts of gold and 10 parts of other metals by weight.

KIF: A trade name for a type of shock protection.

LIGHT-EMITTING DIODE (LED): Used in digital displays on electronic quartz watches.

LIQUID-CRYSTAL DISPLAY (LCD): The electronic display of time, achieved by using a thin layer of liquid held between two plates.

LNIB: Abbreviation for "like new in box"; used when selling watches.

LUGS: The projections on the watchcase that hold the spring bars used to attach a strap or bracelet.

LUMINOVA: A trade name for a non-radioactive luminous material used for watch dials and hands; now replaced by Super-LumiNova.

MAIN PLATE: Essentially, the chassis of the watch; the base plate on which all the other parts of a watch movement are mounted.

MAINSPRING: A watch's power supply, coiled up inside the barrel. When unwound, a common mainspring is about nine to thirteen inches. The longer the mainspring, the longer the power reserve.

MANUAL WIND: Wound by hand, using the crown.

MANUFACTURE: The French word meaning a company that produces at least one movement in-house.

MECHANICAL WATCH: A watch that runs from the energy released by its spring rather than electricity.

MICRO-ROTOR: An automatic watch with a small, decentralized rotor, typically recessed within the movement for extra thinness.

MILITARY TIME: Time measured in twenty-four-hour segments; for example, 8:15 p.m. would be 20:15.

MINERAL CRYSTAL: A watch crystal made of mineral glass, which is cheaper and less durable than synthetic sapphire.

MINUTE REPEATER: A watch that strikes the time on command using different dings and dongs for hours and minutes: There is one tone for each hour, a double tone for each quarter hour, and another higher or lower tone for each minute; for example, Ding Ding Ding, Ding Dong, Dong Dong Dong Dong indicates that the time is 3:19. Invented by Englishman Daniel Quare in 1690, it was an important device before watches could be read in the dark. Now it's a demonstration of watchmaking artistry.

MODULE: A complication that can be attached to a base movement as a complete unit. Chronographs, perpetual calendars, astronomical displays, and repeaters can all be modular in design.

MONOPUSHER: A chronograph with only one pusher for the start, stop, and reset functions.

MOONPHASE: A watch complication that displays the phases of the moon either through an aperture or, less commonly, with a small hand.

MOVEMENT: Basically, a watch's engine. It consists of the winding mechanism, the mainspring, the train, the escapement, and the regulating elements.

NIB: Stands for "new in box," and it means the watch is new (as opposed to LNIB).

NIVAROX: A trade name for a hairspring alloy with superior temperature-compensating properties, available in varying grades: I, II, etc.

NOS: Stands for "new old stock," a watch that has never been used, or even sold, although it can be many decades old.

OSCILLATING SYSTEM: The oscillating system is formed by the hairspring and the balance. Two vibrations of the balance create the ticking sound of a mechanical watch, known as one oscillation.

OVERCOIL HAIRSPRING: A hairspring where the final (or terminal) curve is elevated above the plane of the rest of the spring.

PALLETS: The central component of the escapement, also known as the lever, pallet lever, or pallet fork, alternately locks and receives impulse from the escape wheel and is unlocked by and provides impulse to the balance via the roller jewel.

PATINA: Discoloration of a dial or hands, which is usually due to age.

PERLAGE: A decorative surface treatment of small overlapping circles applied primarily to bridges or the visible portions of the main plate. Also referred to as spotting.

PERPETUAL CALENDAR: A complication that adjusts itself automatically for different month lengths and leap years. Perpetual calendars are programmed to be accurate until the year 2100.

PILOT'S WATCH: See Aviator's watch.

PINION: The smaller, geared portion of a wheel; pinions have "leaves," where wheels have "teeth."

PLATE: Often the main plate, the primary piece supporting the movement's various parts and bridges. The bottom side of a plate is the dial side, the top side the bridge side. Sometimes the word *plate* is used interchangeably with bridge or sometimes refers to smaller, thin coverings or fixtures in a movement.

POWER RESERVE: The length of time a watch will run from fully wound until it stops.

POWER-RESERVE INDICATOR: A subdial that shows how much power remains before a watch stops running.

PULSOMETER: A scale on the dial or bezel of a watch that, with the second hand, can be used to measure a person's pulse rate.

PUSHER: A button on a watchcase that activates a function like the chronograph start/stop or reset, an alarm on/off switch, or a quick-set date corrector.

QUARTER REPEATER: A striking watch that chimes the time on command to the quarter hour. See also Minute repeater.

QUARTZ CRYSTAL: The piece of quartz that serves as an oscillator in a quartz watch.

QUARTZ WATCH: An electric watch regulated by a quartz oscillator.

QUICK-SET DATE: A mechanism that allows the user to set the date directly via the crown or a pusher to avoid having to turn the hands over many times.

RADIUM: A radioactive material formerly applied to watch hands and dials to make them glow in the dark. Due to health concerns, it is no longer used.

RATCHET WHEEL: The wheel attached to the barrel arbor that winds and maintains the

mainspring power in conjunction with the click.

RATTRAPANTE: See Split-seconds chronograph.

REGULATION: The act of altering the daily rate of the watch by means of moving the regulator (curb pins) or the adjustable masses on the balance (in the case of a free-sprung balance).

REGULATOR: Most commonly, the part of the movement that alters the rate of the watch by changing the position of the curb pins and the effective length of the hairspring. Also known as the index.

Also, a watch or clock with the hours and minutes (and seconds) indicated in separate dials (that is, the hands are not coaxial).

REMONTOIRE: A device that ensures a consistent amount of power is supplied to the escapement to improve the isochronism; it generally consists of a secondary power source somewhere in the power train or even on the escapement itself that is periodically rewound by the mainspring. (*Remontoir* is French for "rewind.")

RESONATING BALANCE WHEELS: A set of two balances or pendulums housed within the same structure, designed to vibrate in harmony with each other. Theoretically, some of the imperfections inherent in a watch's hairspring and escapement will be experienced in opposition (if one balance gains time in a certain position, the other one will lose time in the same position). The balances should maintain a sympathetic vibration with each other; that is, should they deviate when disturbed, whether from shocks or positional variations, the imbalances will average out.

RETROGRADE HANDS: Hands that jump backward and begin again when they reach their last indication; for example, a watch with retrograde seconds will reach sixty on a scale, jump back to zero, and start again.

REPEATER: See Minute repeater.

REVERSO: A watchcase that can be turned over within the frame. Although many brands, including Hamilton and Chronoswiss, have sold models, JLC developed the Reverso and still manufactures far more models than any other company.

RHODIUM: A hard, bright silver-white metal often used to electroplate white gold cases because of its chromelike appearance.

ROLLED GOLD: A thin sheet of gold bonded to a base metal. See also Gold-filled.

ROTOR: A chunk of metal that swivels on an axis and transmits winding energy to an automatic watch's mainspring. Each time it moves, it advances the ratchet wheel, which keeps the spring wound.

ROSE GOLD: Gold with a slightly reddish color caused by additional copper in the alloy. Rose gold, red gold, and pink gold are all slightly different alloys with varying amounts of copper and other constituent elements.

SCREW BACK: A back that is able to be screwed into the case, as opposed to watch backs that are screwed in through the use of small screws or are snapped on.

SCREW-DOWN CROWN: A crown that screws down into the case to make a watch more water-and dust-resistant.

SECOND TIME ZONE INDICATOR: An additional dial that can be set to another time zone.

SHOCK ABSORBER: Typically used on the balance pivots, allowing them to shift slightly in their position during shocks without breaking the pivots.

SHOCK-RESISTANT: The ability to withstand an impact equal to a three-foot fall onto a wooden floor.

SKELETON WATCH: A watch whose movement has had much of the material for the plates, bridges, and sometimes even wheels and barrel removed to expose more of the mechanism.

SMALL SECONDS: Seconds displayed by a hand in a small subsidiary dial.

SMARTWATCH: An electronic device that takes the shape of a watch and is worn on the wrist, telling the time in addition to serving other functions. Smartwatches can range from the complex, such as the Apple Watch, to the much simpler, such as Fossil's analog examples that offer fitness tracking and notifications. Some makers also refer to these as "connected watches."

SONNERIE: A watch that sounds the time automatically; a petite sonnerie chimes every hour, a grande sonnerie every quarter hour.

SPLIT-SECONDS CHRONOGRAPH: A chronograph that employs two chronograph second hands to measure elapsed time as well as lap time. In other words, one chronograph hand can be stopped while the other keeps ticking; you can then record time and hit the catch-up button, and the stopped hand will catch up to the next. Also known as rattrapante or doppelchronograph.

SPRING BAR: A thin metal bar with spring-loaded extensions mounted between the lugs that attach a strap or bracelet to the case.

STEM: The shaft that connects to the movement's winding mechanism. The crown is fitted to the opposite end.

STRIKING WATCH: A watch with an acoustic complication such as a minute repeater or sonnerie that is struck on a gong.

SUBDIAL: A small dial placed inside a watch's main dial. These dials often hold complications such as chrono-graph counters, an alarm indication, or a second time zone indicator.

SWAN'S-NECK REGULATOR: A traditional form of micro-regulator that allows very precise adjustment of the rate. It employs a screw for adjusting the position of the regulator and a long, curved spring (shaped something like a swan's neck) to hold the regulator firmly against the tip of the screw.

SWEEP SECOND HAND: A second hand mounted in the center of a dial.

SWISS MADE: A watch can be considered Swiss if its movement is at least 50 percent Swiss (by value), its movement is assembled in Switzerland, and the manufacturer carries out a final technical inspection in Switzerland.

TACHYMETER: A device used on a chronograph for calculating speed over a measured distance or the hourly productivity of any event that takes less than one minute. When a car on the highway passes a mile marker, a passenger starts the chronograph. When the car passes the next mile marker the chronograph is stopped. If the chronograph's second hand points to 75 on the tachymeter scale, this indicates the car's speed is 75 miles per hour.

TANG BUCKLE: The traditional strap attachment involving a pin (called a tang) and buckle.

TANTALUM: A rare blue-gray metal used to make a variety of strong alloys with very high melting points, sometimes used in its pure form for watchcases. Because it is not affected by sweat and other body secretions, it is non-irritating.

TELEMETER: A chronograph scale for measuring distance based on the time it takes the sound to reach the observer.

THREE-PIECE CASE: A traditional watchcase consisting of a case middle, bezel, and back.

TIME-ONLY WATCH: A watch that tells the time without any complications, such as a

chronograph or a date watch.

TITANIUM: A family of gray, hypoallergenic metal alloys containing the element titanium; it is stronger and lighter than stainless steel and is an increasingly popular choice for cases and bracelets.

TONNEAU: A watchcase shaped like a barrel.

TOURBILLON: Invented by Abraham-Louis Breguet in 1801, it is a rotating cage within the watch that contains the balance, hairspring, and escapement. Traditionally it rotates once every minute (although versions with different time frames are not uncommon) and is designed to eliminate positional errors in the vertical positions. As it rotates, it exposes each positional error for the same amount of time, thus averaging them out.

TRAIN: A series of wheels in a watch or clock; the power train or gear train.

TRICOMPAX: A chronograph with three subdials at three, six, and nine o'clock.

TRIPLE CALENDAR: A dial displaying the day, date, and month.

TRITIUM: A slightly radioactive substance used to make hands or hour markers glow in the dark. Super-LumiNova, a non-radioactive substance, is slowly replacing tritium.

TWO-TONE: A watchcase made of two metals of different colors, typically steel and gold.

UNI-DIRECTIONAL WINDING: An automatic mechanism that only winds the mainspring when the rotor is turning in one direction.

UP-AND-DOWN INDICATOR: Indicates power reserve.

WATCH WINDER: An electric device that stores and winds automatic watches when the watch isn't in use. Typically, a watch winder should give just enough energy to make a watch run for twenty-four hours in any given day. It is particularly useful for a perpetual calendar, or some other complex astronomical complication, where it is overly labor intensive to constantly reset the watch.

WATER-RESISTANT: The ability to withstand water pressure. Water resistance is measured in meters and refers to the depth that the watch will keep out water.

WHEEL: The circular gear revolving around an axis, which transmits power or motion.

WHITE GOLD: Any alloy of gold that is white in color, usually with nickel or palladium.

MISCELLANY

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Magazines and Websites

Not long ago, finding reliable information about watches was difficult. There were few magazines dedicated to the wristwatch, and the web belonged mostly to secondhand and gray market dealers. Luckily, those days are behind us.

Magazines such as *International Watch*, *Revolution*, *WatchTime*, and *Watch Journal*, cover different segments of the market and bring their own perspectives to bear. Some are more technical than others, some pay particularly close attention to design, and others focus exclusively on watches in certain price segments.

A vast number of websites dedicated to watches have also appeared over the last decade. Some of these are excellent sources of knowledge that might otherwise be nearly impossible to find on your own; some are traps filled with misinformation. Forums such as ThePuristS.com, TimeZone.corn, and WatchUSeek.com go the crowd-sourcing route, which can be both a blessing and a curse. Platforms such as *Hodinkee*, *Worn & Wound*, and *Fratello Watches*, on the other hand, are robust online magazines that bring expert eyes to a sometimes opaque industry. There are even entire social networks built around watches and the collecting community, with the largest being 8Past10.com.

Selling watches online is a relatively new phenomenon, despite the rise of e-commerce in nearly every other consumer category. Vintage dealers and gray market sellers of new watches were first to the internet, but now some of the larger brands sell directly online as well. This is something that will surely only grow in the future, especially as retailers find new ways to bring the highly tactile and emotional experience of handling a watch to consumers in a virtual way.

URWERK UR-103, c. 2008, white gold, hand-wound mechanical movement with rotating satellite hour and fixed minutes track

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Octo Finissimo Minute Repeater by
Octo Finissimo Skeleton by
snake-shaped Serpenti by
ultra-thin movement by
Bulgari, Sotirio
Bulova
Accutron Spaceview by
Curv Chronograph by
Lunar Pilot Chronograph by
Wrist-Alarm by
Bulova, Ardé
Bulova, Joseph
Buren Watch Company
Büsser, Maximilian

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  Longines on
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  as movement
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  Cartier Monde SA by
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  Collection Privée Tortue by
  Collection Privée Tortue Chronograph Monopoussoir by
  Crash by
  Crash Skeleton by
  Drive De Cartier by
  Drive De Cartier Extra-Flat by
  Gondole by
  Pasha by
  Piaget by
  Rotonde De Cartier Annual Calendar by
  Rotonde De Cartier Astrocalendaire by
  Rotonde De Cartier Astro-Mystérieux by
  Santos Dumont by
  Tank A Guichet Jump Hour by
  Tank Américaine by
  Tank Automatic by
  Tank Basculante “Millennium Edition” by
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  Tank MC Skeleton by
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Chaumet, Pierre
Chopard: Happy Sport by
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subdial and
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wristwatch
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Lord Elgin by
Lord Elgin Chevron by
manufacturing by
on models
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on Eternamatic Kon-Tiki
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Kontiki Reference by
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Grand SBGJ005 by
Grand SBGM221 by
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on Modéle Avec Personnages by
Pop Hot Stuff by
Pop Jet Black by
Pop Poptastic by
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Skinchrono on the Road by
Skin Skinnoir by
Skin Sweet Planet by
Skyrider by
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Tudor

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Heritage Black Bay by
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Oyster Prince "Tuxedo" by
Pelagos LHD by
with Rolex; "Snowflake" Submariner Reference (9411/0) by
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Ulysse Nardin
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Classico Manufacture Grand Feu by
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